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Facility requirements for the University of Illinois, Chicago Undergraduate Division, were analyzed to estimate space requirements of the various departments of the Division. Standards used were established by assignment of areas to actual equipment, furniture, etc., for specific usage of the space under consideration rather than assignment of space being based on a multiplier of a set square footage per student times the number of students assigned to the area at any one time. Proper functioning of a space was compared with the type of equipment used and the circulation space needed. Resultant room size was divided by the required number of students to arrive at an average student station size. Using this method, space required for classrooms, faculty, administration, laboratories and service functions were estimated for each construction phase of the expansion program. (BH)

REPORT TO

THE UNIVERSITY OF ILLINOIS

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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1959

S.U.a. Incorporated, New York

REPORT TO THE UNIVERSITY OF ILLINOIS

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REPORT TO THE UNIVERSITY OF ILLINOIS

ANALYSIS OF SPACE STANDARDS

In making an analysis of the standards set up by the University of Illinois for the Chicago Undergraduate Division, S. U. A. has attempted to convert its standards to meet on a common ground with the standards expressed by the University of Illinois. The standards used by S. U. A. have been established on the basis of the assignment of area to actual equipment, furniture, etc. to a specific type of space under consideration, rather than assigning space based on enrollment or strictly on the number of occupants in a facility. We have found it impossible to set one standard for classrooms, laboratories, etc. that will fit all college and university requirements. It is obvious therefore that each job we do is a "custom" job.

In analyzing the validity of the standards set up by the University of Illinois we have, in some cases, made basic assumptions in classroom set-ups and equipment used, and in other cases taken areas we have established for similar types of space in other schools and calculated the amount of space which could be said to be allotted to each student station in a particular facility. However, this method is still based on space occupied by equipment or furniture rather than space occupied by a person. For example, a laboratory for twenty students in a particular course requires certain pieces of equipment. The equipment further requires an amount of work space around it in order to function properly. Proper functioning can be achieved by laying out the equipment in a room in a particular way. Having gone through these steps, we then know the room size and can arrive at an average student station size by dividing the room size by the number of students. However, this average student station size is for a particular facility and a particular number of student stations. Adding or subtracting student stations will not necessarily decrease or increase the room size in the same proportion due to the fact that some of the equipment can be charged to the laboratory as a whole rather than to each student station.

REPORT TO THE UNIVERSITY OF ILLINOIS

For convenience of reference we have included the standards set up by the University of Illinois. They can be found beginning on page 20 of this report.

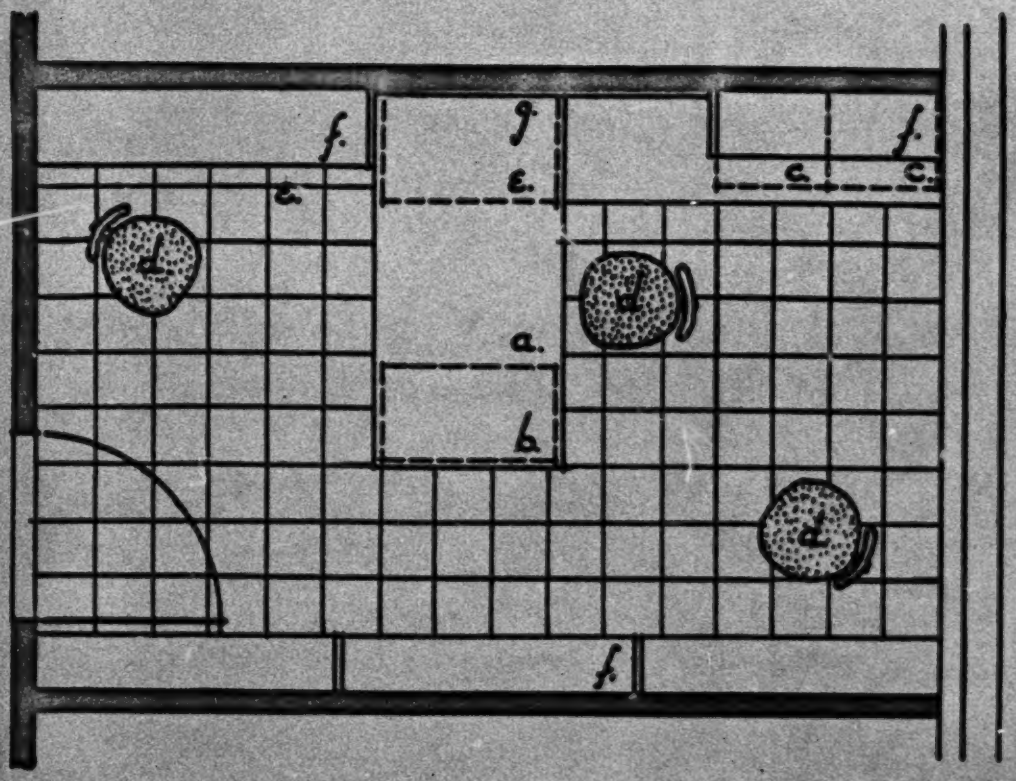
Our comments on these standards follow:

1. Office Standards

a) Teaching Staff

In proposing areas for private offices to house professors, associate professors and assistant professors, one set of standards has been recommended for full-time staff and a different one for part-time staff. Unless this difference is for prestige purposes there seems to be little justification for the two different offices. (Is not the primary difference between a full-time professor and a part-time professor the amount of time spent on the job rather than the type of work done?) Naturally, a part-time professor who works mornings only and another part-time professor who works afternoons only could very easily share the same office, but this type of scheduling becomes very complicated and does not always have the flexibility necessary for assigning the proper kind of space for a particular function. . An office of 120 square feet could well serve a faculty member. However, an office of 100 square feet, properly equipped, should serve a faculty member equally well. Twenty square feet, although a small item in itself, grows to a very sizeable construction cost when multiplied by the total number of faculty members projected for an institution the size of the Chicago Undergraduate Division. An office of 100 square feet can contain a desk and chair, two side chairs, four file drawers, a storage compartment, a tack board and numerous bookshelves. (See typical layout on following page). The additional twenty square feet which is recommended in the University of Illinois standards for full-time faculty members could, of course, house another side chair or two, or two additional file cabinets, or various other small pieces of equipment.

Again, in the category of instructors and assistants, a differentiation has been made between full-time and part-time staff. Part-time instructors also can be

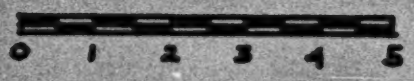


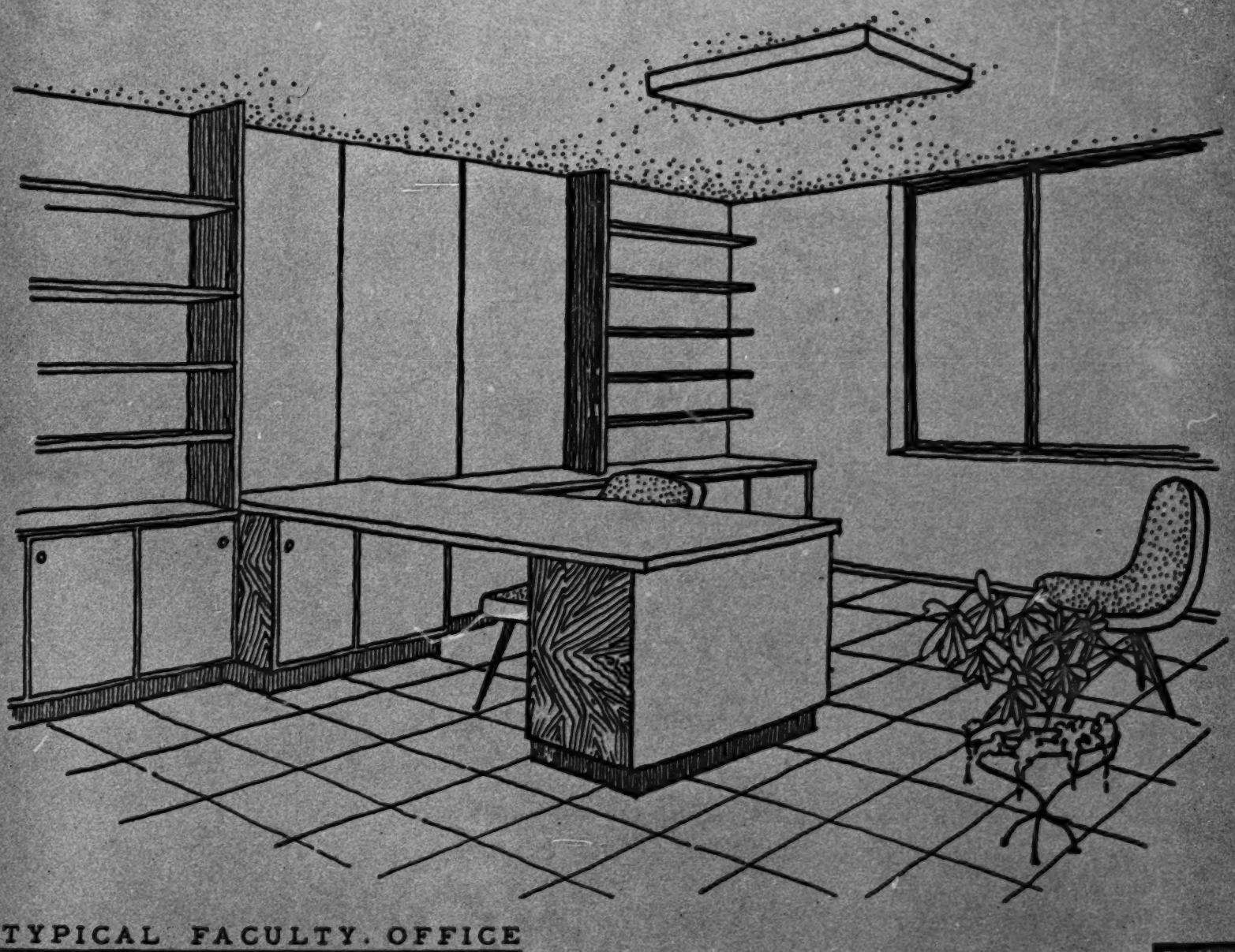
Legend

a. desk
b. file and two shallow drawers
c. file-four drawers
d. chairs
e. closed storage
f. book shelves
g. tack board

PLAN

Scale:





TYPICAL FACULTY. OFFICE

expected to do some counselling of students; offices with more than two stations do not afford much privacy for this type of interview. A two-station office of 150 square feet allows space for each occupant to have a desk and chair, a side chair, a file cabinet and a bookcase. Since the total amount of space used in this manner will probably differ only slightly from the amount necessary to give each full-time instructor and assistant 85 square feet in a two-station office and each part-time instructor and assistant 70 square feet in a multiple station office, the additional privacy afforded the part-time staff should be considered. Also, changes in the ratio of part-time to full-time staff will not affect the type of office space needed if the same type of space has been provided for each; therefore, the two-station offices of 150 square feet are recommended.

b) Administrative Offices

The standards for the offices of the administrative head, the assistant administrative head and the reception area seem quite adequate. There is, however, a possibility that a conference room of 200 square feet might be small for general departmental use--a conference room of this size will comfortably seat about eight people around a table. Perhaps more flexibility could be gained by combining the areas allocated to two departments to make a larger conference room which could be shared by the two departments. A room of 300 square feet, which seats twelve around a conference table, has been found to be a very functional conference room. Intensiveness of use and size of anticipated conferences should naturally determine whether it is more feasible to have two small conference rooms or one large one.

The space to be used for file, work and storage space is a little confusing. If this storage space is meant to serve the entire department, then the allowance is quite probably very low. However, if it is meant to serve only the administrative unit of the department, the figure seems high. The file, work and storage space would be more accurate if based on the number of clerical (non-academic) staff. The amount of

office material and number of files is usually more directly related to the number of people required to process it than to the size of the executive's office and conference room. By allowing 125 square feet per clerical employee, space would be provided for a desk and chair, five file cabinets, and approximately twenty-five square feet of storage space for supplies, forms, etc. It is not meant to imply that all records can be kept in the clerical office; however, inactive records are usually stored in a type of space that is not desirable for offices.

2. Instructional Laboratories

In order to accurately compute the space requirements for the laboratories listed in the space standards it would be necessary for us to know the exact size of the equipment to be included, whether the course is elementary or advanced, and any other special consideration that the nature of the course or method of teaching might impose for each specific laboratory layout. The laboratories listed encompass within each item many diverse laboratory types; we assume that the net square footage per station listed is an average for all these different laboratories within a given type.

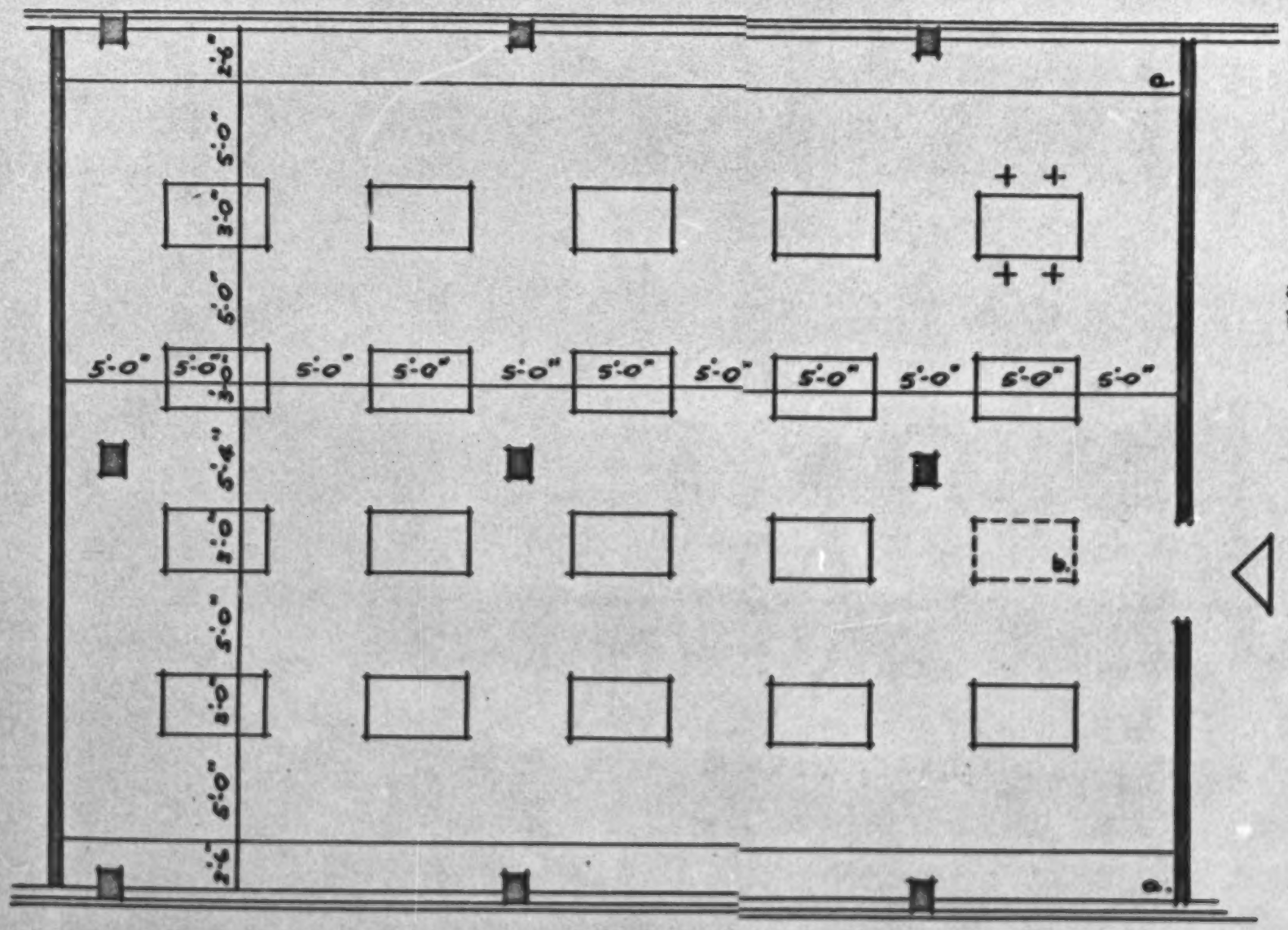
In computing space requirements for other institutions the following standards were used as a basis:

a) Clear space between benches is to be 5'-0". (This assumes that students work on both sides of the benches. If it is necessary for all students to face the same direction, less aisle space and more benches are necessary.)

b) Length of bench per student station varies from 2'-6" to 6'-0" depending on equipment and course requirements.

c) Separate preparation-storage space is provided for all laboratories.

d) Within each laboratory provision is made for storage, books, general work areas, etc.



Legend

4 students per 5'-0" lab. table
76 students
a. wall services, tables, sinks, etc.
b. lab. table or space for special equip.

TEACHING LABORATORY

size: 42'-0" x 55'-0" = 2310 sq. ft.

scale: 0 1 2 3 4 5 6 7 8 9 10

In lieu of the specific information mentioned above, we have wherever possible, matched your course requirements (assumed to be the same as those in your current catalog) to standards we have established for similar courses in our previous studies. The areas computed are adequate for the specific courses and the size of sections stated. Any deviation in the size of section and difference in equipment would of course affect the size of the student sections:

Type of Laboratory	No. of Stations	Area	Square Foot Per Student Station
1. Statistics - using 36"x24" tables	10	300	30

The proposed University of Illinois standard is 35. Assuming that the same size tables are used we feel that 30 square feet per student station is adequate.

2.3.4. Machine Shop, Foundry, and Welding Shop: We have found in our experience that most universities do not maintain machine shops designed as teaching laboratories and many who maintained them at one time have discontinued the practice. Even less frequent is the demand for welding and foundry laboratories. Thus, a special study would have to be made in this area in order to determine ideal space requirements. One college study conducted by S. U. A. includes a forging and welding shop of 1, 500 square feet, designed to accommodate 12 students. The machine shop at the same college is being discontinued. One Institute of Technology maintains a machine shop with a total area of 15, 000 square feet, including welding, designed for a maximum of 60 students. However, since area requirements are largely dependent on the type of equipment to be used, it would be desirable to defer recommendations on these items until we have more specific information.

Type of Laboratory	No. of Stations	Area	Square Foot Per Student Station
5. Civil Engineering - (T. A. M.):			
a. Hydraulics	20	2, 350	118
b. Materials Testing	20	2, 600	130

The area to be provided in both of these laboratories, as stated before, can vary in direct proportion to the type and size of equipment contained and no direct comparison can be made to the University of Illinois standard of 150 square feet per student station.

6. Civil Engineering - Drafting			
a. Equipped with 32"x42" boards, including space for instructor and storage:	40	1, 600	40
	70	2, 800	40
b. Equipped with 34"x54" boards, including space for instructor and storage:	30	1, 600	53

The University of Illinois standard of 50 square feet can be compared to the S. U. A. standards with the board sizes indicated.

7. Electrical			
a. Dynamo	12	2, 975	150
b. Industrial Electronics	12	1, 100	90
c. Measurements	12	750	62

The University of Illinois standard of 50 square feet per student station is low as compared to the S. U. A. standards listed.

8. Art			
a. Ceramics	15	900	60
b. Painting	15	600	40
c. Sculpture	15	1, 000	66
d. Print Making	15	1, 350	90

The University of Illinois standard of 60 square feet is approximately an average (64 square feet) of the four courses listed above. This averaging points up the fact that the individual needs of courses within a division can vary to a great degree in their space needs.

Type of Laboratory	No. of Stations	Area	Square Foot Per Student Station
9. Architecture			
a. Equipped with 32"x42" boards, including space for instructor and storage:			
1st Year Students	50	2,000	40
2nd Year Students	45	2,025	45
3rd, 4th & 5th Year Students	40	2,000	50

The University of Illinois standard is 50 square feet per student station which S. U. A. feels is adequate for the three upper classes but excessive for the 1st and 2nd year drafting room.

10. Physics				
a.	Introductory Physics	20	800	40
b.	General Physics	20	800	40
c.	Meteorology	20	800	40
d.	Contemporary Physics	10	550	55
e.	Heat and Light	10	800	80
f.	Electrical Measurements	10	650	65
g.	Sound	10	750	75
h.	Electronics	10	750	75
i.	Mechanics	10	550	55

The University of Illinois standard of 50 square feet per student station is low for the average S. U. A. standards for the courses listed. Heavier section scheduling of the courses with the lower standards would of course lower this average. Once again the emphasis is on the specific course requirements as opposed to the overall average.

11. General Engineering:

Students in this major use the laboratories used by the other engineering divisions. The scheduling of these students in conjunction with the other sections could materially affect the final student areas required.

Type of Laboratory	No. of Stations	Area	Square Foot Per Student Station
12. Biological Sciences			
a. Animal Biology	24	700	29.2
b. Plant Biology	30	850	28.3
c. Plant Anatomy	24	750	31.3
d. Mycology	20	700	35
e. Cytology	20	700	35
f. Comparative Vertabrate Anatomy	20	850	47.5
g. Histology	20	750	37.5
h. Animal Parasitology	15	650	43.3
i. Comparative Animal Physiology	16	900	56.25
j. Vertebrate Natural History	15	850	56.7
k. General Ecology	15	850	56.7
m. Radiobiology	12	700	58.3

With the exception of the last four courses listed above, the University of Illinois standard of 50 net square feet per student station is high as compared to the S. U. A. standards for the courses listed. The increase in area per student station for the last four courses is due to the increased laboratory bench space assigned per student, and the method of setting up the benches whereby all the students face the instructor.

13. Chemistry			
a. General Chemistry	32	800	25
	16	600	37.5
b. Advanced General Chemistry	25	1,000	40
c. Qualitative Analysis	16	675	42.2
	32	1,200	37.5
d. Organic Chemistry	30	1,850	61.6
e. Physical Chemistry	10	950	95

The University of Illinois standard of 50-70 square feet per student station is not as broad as S. U. A.'s range of 25-95 which once again emphasizes the "customizing" for specific laboratories.

14. Physical Science			
a. Mathematics	20	450	22.5

As the approved sequence of courses is chosen from Chemistry, Mathematics or Physics, it is assumed the laboratory requirements will be the same as those listed under these divisions.

Type of Laboratory	No. of Stations	Area	Square Foot Per Student Station
15. Geology			
a. General Geology	24	675	28
b. Minerology and Petrology	25	750	30
c. Paleontology	15	600	40

The University of Illinois standard of 35 square feet of area per student station is a good average of the S. U. A. standards listed.

16. Geography			
a. Geography and Cartography- including built-in storage	35	810	23

On the basis of this one comparable course, the University of Illinois standard of 35 square feet per student station is high.

REPORT TO THE UNIVERSITY OF ILLINOIS

The University of Illnois standard of laboratory auxiliary space equal to 20 percent of the laboratory area is considered to be too broad an averaging considering the varied needs which our standards show are necessary. The required auxiliary space standards determined by S. U. A. for the laboratory types, by percentage of laboratory area, are:

1. Statistics: 10 percent for storage.
2. Machine Shop: See laboratory listing.
3. Foundry: See laboratory listing.
4. Welding Shop: See laboratory listing.
5. Civil Engineering (T. A. M.); 5 percent for instrument storage.
6. Civil Engineering - Drafting: None required.
7. Electrical:
   a. Dynamo: 25 percent for generator room, instrument room and work room.
   b. Electronics: 40 percent for storage and preparation.
   c. Measurements: 20 percent for instrument room and storage.
8. Art:
   a. Ceramics: 20 percent for clay storage
      20 percent for kiln room
      50-80 percent for glazing room depending on size and number of sections
      5 percent for damp room
      5 percent for dry room
      60 percent for ceramic preparation room.
9. Architecture: a woodworking shop of approximately 800 square feet is required for model-making, etc.
10. Physics:
    a. General Physics: 28 percent for preparation and storage.
    b. Contemporary Physics: 35 percent for preparation and storage.
    c. Heat, Light, and Optics: 20 percent for preparation and storage.
    d. Electrical Measurement: 20 percent for preparation and storage.
    e. Sound: 30 percent for preparation and storage.
    f. Mechanics: 35 percent for preparation and storage.

11. General Engineering: See laboratory listing.

12. Biological Sciences: All laboratories have been allotted a preparation and storage area of 20 percent (with a minimum room size of 150 square feet).

13. Chemistry:

    a. General Chemistry: 17 percent for preparation and storage and additional 17 percent for balance room.

    b. Advanced General Chemistry: 15 percent for preparation and storage.

    c. Qualitative Analysis: 15 percent for preparation and storage.
    22 percent for balance room.
    5 percent for a work area.

    d. Organic Chemistry: 15 percent for preparation and storage.

    e. Physical Chemistry: 20 percent for preparation and storage.

14. Physical Science: See laboratory listing.

15. Geology:

    a. General Geology: 30 percent for preparation and storage.

    b. Minerology and Petrology: 13 percent for weighing room.
    13 percent for preparation and storage.

16. Geography: None required.

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REPORT TO THE UNIVERSITY OF ILLINOIS

In order to attain an 82 percent utilization of laboratories for those rooms used for two-hour periods, the entire schedule of both laboratory courses and the corresponding lecture courses must be geared to this end. It is not necessarily an impossible task; it is in all probability not possible under any current schedule. To achieve an 82 percent laboratory utilization will require, in effect, a double, or mirrored schedule. For example, if lecture "A" meets from 9:00 to 10:00 and its corresponding laboratory work is from 1:00 to 3:00, then it is necessary to have a second section of lecture "A" from 1:00 to 2:00 and its corresponding laboratory from 9:00 to 11:00. This much is easy to arrange. However, section one now has a free hour from 10:00 to 11:00 and section two is free from 2:00 to 3:00 to enroll in another lecture course. In order to satisfy both sections, additional required or elective lecture courses must be offered at both hours. It has not been possible to achieve this type of flexibility when working with existing schedules, but it should be possible to set up a new schedule with a dual purpose: to use the facilities in the most economical manner and to give students as large an amount of course selectivity as possible.

To attain a 73 percent utilization of rooms used for three-hour periods requires the same considerations discussed above. An 80 percent student station utilization is a reasonable figure for new laboratories which have been designed with the ideal section size in mind.

3. Classrooms (Lecture Rooms)

S. U. A. lecture room space standards are:

a. Seats are to be 2'-0" on centers side to side and 3'-2" from back to back.

b. Aisles should be provided so that no student need cross over more than four others

c. There should be no more than seven rows without a rear cross-over aisle.

d. Aisles should be a 3'-0" minimum increasing directly with the room capacity.

e. From the front of the first student chair to the front wall should be 7'-0" to 8'-0", varying directly with the room capacity.

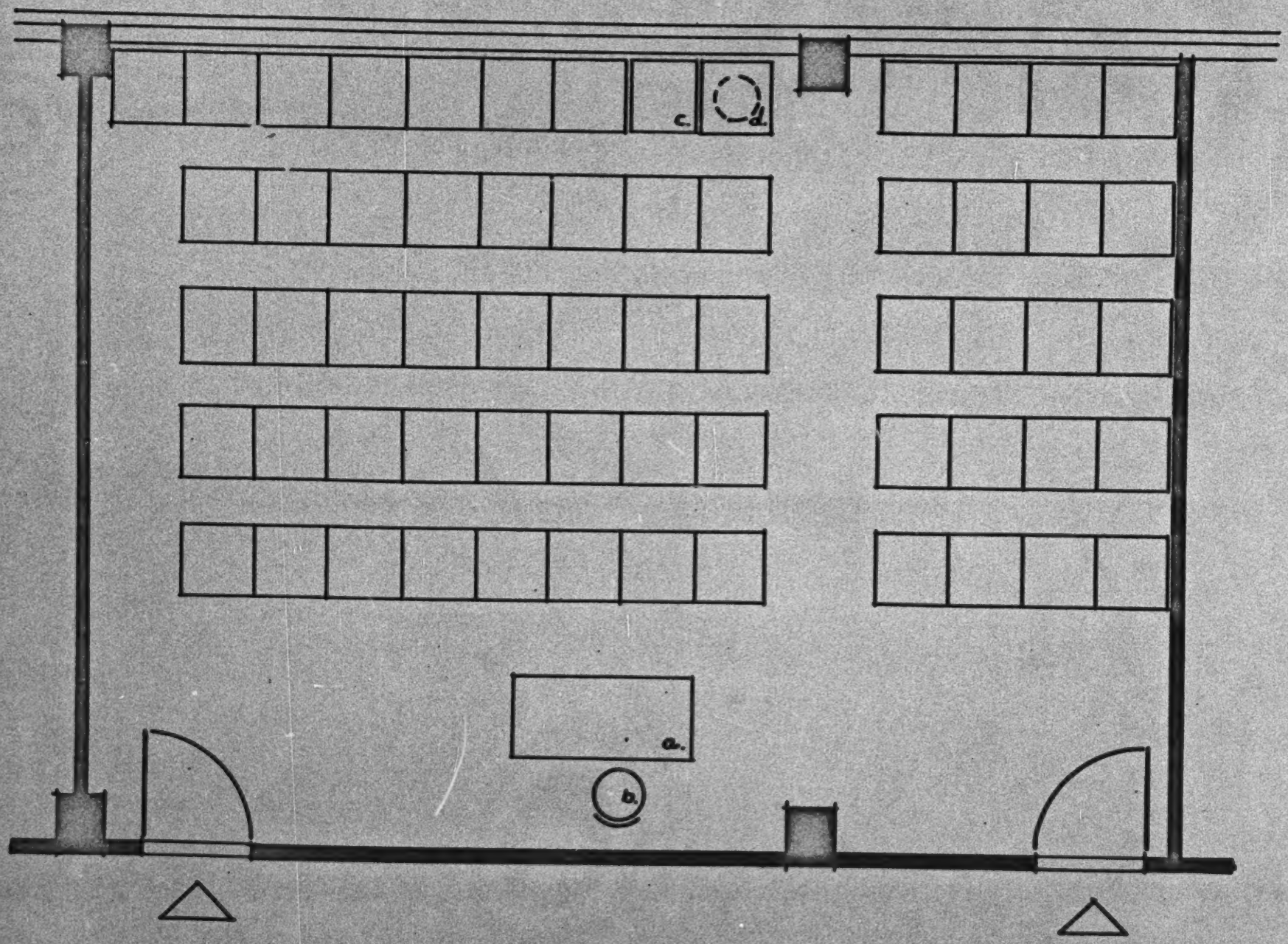
On the basis of the above, the net square feet per station listed in the University of Illinois standards is correct for items one through five (lecture rooms seating up to 100 students), although it should be pointed out that the area is a bit high for the upper limit in each item. However, as an average, the University of Illinois standards for these items check with S. U. A. standards.

Item six, according to S. U. A. standards, should read "101-150 stations, 11.5 square feet per station." Item seven should read "over 150 stations, 10.5 square feet per station." The increase in items six and seven is directly attributed to the increase in aisle size and cross-over aisle necessary in rooms of this capacity.

A sample lecture room layout is shown on the following page.

With reference to room utilization, an 82 percent utilization of lecture rooms is a reasonable figure. However, if this goal is to be attained it will be necessary to schedule classes more evenly throughout the entire instructional day than is presently the practice in many educational institutions.

An 80 percent student station utilitzation in classrooms is difficult to attain due to the fact that classrooms can be used by various courses which may have different desirable section sizes. Even though classrooms can be designed with specific courses in mind, it is often necessary to place a section of, for example, 25 students in a room designed for 35 because there are no rooms of 25 stations available at the proper hour. Seventy percent student station utilization is generally considered good for lecture room space.



Legend

a. instructors desk
b. instructors chair
c. cabinet for projector
d. seat or stool

LECTURE ROOM

size: 21'-6" x 29'-6" = 635 sq. ft.
60 seats

scale: 0 1 2 3 4 5

4. Research Laboratories

An analysis of the requirements for the space devoted to research laboratories is based on the research space allocated on a personnel basis, in a manner similar to that used in determining office space.

a) Types of Laboratories

1) The studies S. U. A. has made have shown that a unit allocation of approximately 150 square feet of space per person, exclusive of desk space and office equipment, is required for research personnel in botany, chemistry, geology and zoology.

2) Psychology and Engineering (which includes civil, electrical and mechanical) research laboratories should also have 150 square feet of space per person. Physics research laboratories, however, should have 200 square feet per person. This increase in area is due to the large, movable items of specialized equipment (such as oscilloscopes, auxiliary power generators and other large electronic units) which may remain in the aisle area during use, thus necessitating more circulation area than in other laboratories.

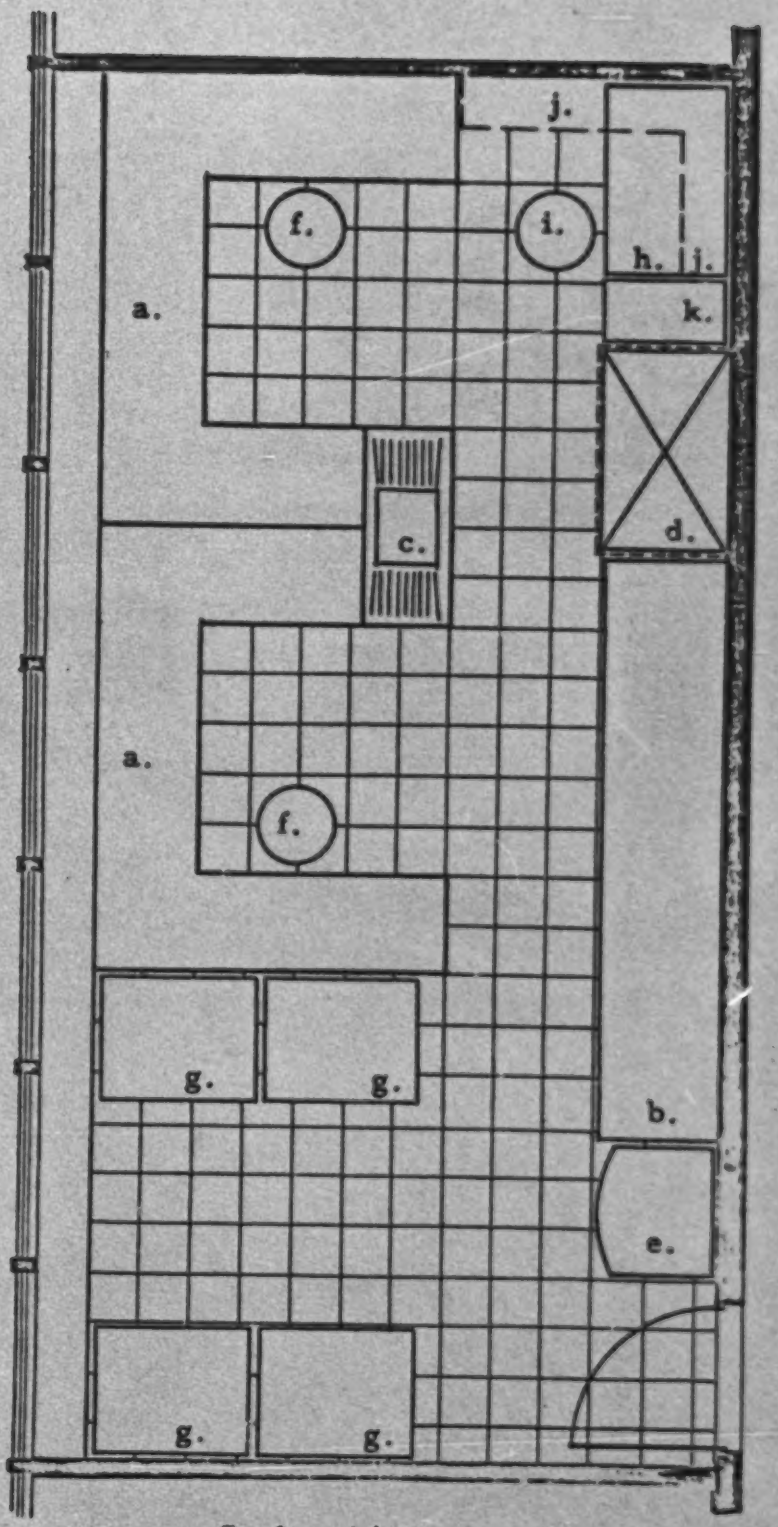
3) Graduate student research laboratories should have 150 square feet per person. This area can be decreased when more than two persons share a laboratory since the percentage of space required for circulation is reduced as the size of the laboratory is increased.

S. U. A. has not made any differentiation in the space allocation between faculty and graduate research personnel, feeling that the equipment needs are the same for either in the small, self-contained laboratory unit.

It should be emphasized that space requirements for research of a specialized nature must be developed individually by an equipment layout.

b) Auxiliaries

Office space is allocated on the basis of 50 square feet per graduate student. Laboratory services, preparation rooms and storage space is provided equal to 15 percent of the assigned research laboratory space.



Scale: 1/4" = 1' - 0"

Legend

a. laboratory bench
b. auxiliary work bench for special equipment (e.g., microscope, Warburg apparatus, oscilloscope, balance, etc.)
c. sink
d. fume hood (or other special equipment)
e. refrigerator
f. adjustable laboratory stool
g. research specimens (fish tanks, animal cages, plant racks, etc.)
h. graduate student desk
i. desk chair
j. book shelves and/or slide files over desk
k. file (five-drawer letter)

TYPICAL 2-MAN RESEARCH LABORATORY

5. Areas for physical education, intramural sports, recreation and varsity athletics.

a) Type A - Indoor Teaching Stations

The establishment of a standard for this category would be dependent upon:

1. The extent to which the Armory-Auditorium building will affect this type area. The answer to S. U. A.'s questions concerning this building, in our letter dated February 3, 1959, would have to be taken into consideration in conjunction with the overall needs of the physical education program at Chicago.

2. A complete breakdown as to the extent of the program, number of students involved, ratio of students by sex, size of sections involved and type and number of specialized areas (courts, etc.) desired.

b-c) It would be necessary to have a comprehensive listing of the extent of the program and other assumptions listed in "2" above before preliminary space requirements could be determined. It has been our experience that no valid assumptions can be made unless they are based on specific requirements.

PROPOSED PLANNING STANDARDS FOR ESTIMATING BUILDING SPACE REQUIRED FOR THE CHICAGO UNDERGRADUATE DIVISION

1. Office Standards

	Net sq. ft.
a. Teaching staff	
(1) Full time staff	
(a) Professors, Associate Professors and Assistant Professors	120 per station
(b) Instructors and Assistants (2 stations per office)	85 per station
(2) Part-time staff	
(a) Professors, Associate Professors and Assistant Professors (2 station offices)	100 per station
(b) Instructors and Assistants (multiple station) offices	70 per station

	Net sq. ft.
b. Administrative offices	
(1) Major Administrative Unit (Colleges)	
(a) Administrative Head	200
(b) Conference Room	300
(c) Assistant Administrative Head	150
(d) Non-Academic Staff, per station	80
(e) Reception Area	200
(f) File, work and storage space	35% of above
(2) Intermediate Administrative Unit (Depts.)	
(a) Administrative Head	150
(b) Conference Room	200
(c) Assistant Administrative Head	150
(d) Non-Academic Staff, per station	80
(e) Reception Area	150
(f) File, work and storage space	35% of above

2. Instructional Laboratories	Net Square Feet Per Station
a. Laboratory types	
(1) Statistics (Commerce)	35
(2) Machine Shop	162
(3) Foundry	165
(4) Welding Shop	105
(5) Civil Engineering (T. A. M.)	150
(6) Civil Engineering, Drafting (includes space for lecture)	50
(7) Electrical	50
(8) Art	60
(9) Architecture	60
(10) Physics	50
(11) General Engineering	50
(12) Biological Science	50
(13) Chemistry	50-70
(14) Physical Science	50
(15) Geology	35
(16) Geography	35

b. Laboratory Auxiliary Space Equal to 20% of Laboratory Area

c. Utilization of Instructional Laboratories

(1) Average hours use per week

(a) It will be assumed that laboratories and drafting rooms for courses with two hour periods can be scheduled 36 hours per week. This results in an 82 per cent utilization of the 22 laboratory periods available per week (four laboratory periods per day Monday through Friday and two periods on Saturday available).

(b) It will be assumed that laboratories and drafting rooms for courses with three hour periods can be scheduled 24 hours per week. This results in a 73 per cent utilization of the 11 laboratory periods available per week (two laboratory periods per day, Monday through Friday and one period on Saturday available).

(2) Average student station utilization.

It will be assumed that in determining the number of student stations required per laboratory that an average of 80 percent utilization of the stations will be realized.

3. Classrooms

a. Size	Net Square Feet Per Station
(1) 0-20 stations	20
(2) 21-40 stations	15
(3) 41-50 stations	14
(4) 51-75 stations	13
(5) 76-100 stations	12
(6) 101-150 stations	10
(7) over 150 stations	9

b. Utilization

(1) Average hour per week

It will be assumed that classrooms can be scheduled on an average of 82 percent of the available hours per week (36 hours).

(2) Average student station utilization

It will be assumed that the number of stations required per classroom will be based on an 80 percent student station utilization.

4. Research Laboratories

a. Types of laboratories	Net Square Feet Per Research Worker *
(1) Wet laboratories	170
(2) Dry laboratories	130
(3) Graduate	90

* Research workers include the academic and non-academic technical staff.

b. Auxiliaries

Research laboratory auxiliary space equals 40% of research laboratory area. It is not intended that the above standards would be applied to special type laboratories such as nuclear, concrete testing, soil testing, computer laboratories, etc. These laboratories require specific study to determine the necessary space required.

5. Areas for physical education, intramural sports, recreation and varsity athletics.

a. Type A--Indoor Teaching Stations

Including: (a) Gym floors, mat areas, swimming pools, courts, etc.

(b) Adjacent to lockers and showers and within ten-minute walking distance of academic classrooms.

Uses: Primary -- Instructional classes.
Other -- Varsity sports, intramural sports, informal sports participation, student and faculty recreation, etc.

Preliminary estimate of space needs of this type area -- 8 square feet per student (total enrollment).

b. Type B -- Outdoor Teaching Stations

Including: (a) Sports fields of all types.

(b) Adjacent to lockers and showers and within ten-minute walking distance of academic classrooms.

Uses: Primary -- Instructional classes.
Other -- Varsity sports, intramural sports, informal sports participation, student and faculty recreation, etc.

Preliminary estimate of space needs of this type area -- 80 square feet per student (total enrollment).

c. Type C -- Sports, Intramural and General Outdoor Recreation Areas

Including: (a) Playing fields of all types, tennis courts, softball diamonds, etc.

(b) Too far removed from lockers, showers, living quarters and academic buildings for use as teaching stations.

Uses: Intramural sports, varsity sports, informal sports participation, student and faculty recreation, etc.

Preliminary estimate of space needs of this area type (c) -- 170 square feet per student (total enrollment).

REPORT TO THE UNIVERSITY OF ILLINOIS

ANALYSIS OF SPACE STANDARDS

The following preliminary estimates of space requirements for service departments, physical plant facilities and student union comprise the second section of this report.

The section on service departments includes comments on Admissions and Records, Business Office, Dean of Students, Health Service, Legal Counsel, Non-Academic Personnel, Publications, Public Relations, Student Counseling, University Administration, Bureau of Institutional Research, and Library.

The section on physical plant facilities includes comments on Administration - Engineering, Operations, Sanitation and Safety, Utilities, Building Maintenance, Stores Operation, and Outside Yard.

The section on the student union includes comments on various types of space to be included, such as administrative, dining, and recreational.

Unless otherwise indicated, Phase I, II, and III in this report refer to a campus of 8,000, 12,000 and 20,000 students, respectively.

REPORT TO THE UNIVERSITY OF ILLINOIS

PRELIMINARY ESTIMATES OF SPACE REQUIREMENTS FOR SERVICE DEPARTMENTS

The following preliminary estimates of space are based on requests submitted by various University officials to the Space Planning Office. In a few instances the information supplied was insufficient for critical analysis. These few cases are clearly noted as such.

In the case of file cabinets and the space required for them, certain standards were used in estimating the amount of filing space required. In Health Service and Admissions and Records filing provision for each of the phases was made on the basis of one-half inch file drawer depth for each student. Since the effective depth of a standard file drawer, for filing purposes, is approximately 24 inches, the records of 48 students were presumed to fit in one drawer, the records of 240 students in a five-drawer file. Thus, in Admissions and Records (Phase I), file requirements for 6,000 students means 25 five-drawer file cabinets. The same procedure was used in estimating the file cabinet needs of the Health Service. The difference between the two groups in each of the phases lies in the specially stated needs of the Health Service for other files, such as for X-rays and general office.

In all other departments, outside of the two already described and Business Office and University Administration, it was estimated that each employee generates about five cubic feet of records that have to be filed. Thus, in Phase I, the Dean of Students office has 18 employees. Using our yardstick, they need filing cabinet space for 90 cubic feet of paper. Since each five-drawer legal file cabinet holds ten cubic feet of records, nine cabinets are needed by the Dean of Student's office. Exceptions to this are in certain accounting and purchasing groups in the Business Office where each employee, due to greater amount of paperwork, is estimated to generate ten cubic feet of records that require filing. The same holds true for University Administration where the greater paper storing needs arise because of the problem of storing duplicates of correspondences carried on by other departments.

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REPORT TO THE UNIVERSITY OF ILLINOIS

In the Tabulating section of the Business Office, projections are made in terms of twelve-drawer punch card files. Otherwise, all file cabinets refer to standard-size legal files.

In allowing for dead file storage and microfilm space, for files not weeded out and destroyed, a reasonable amount for this purpose is estimated to be approximately one-third of the live filing cabinets currently in use.

In Phase I, one-third of the filing cabinets currently in use comes to about 250 file drawers; in Phase II, approximately 415 file drawers; in Phase III, approximately 600 file drawers. The most economical way, in terms of space, is to store relatively inactive records in a vertical filing cabinet. Legal size cabinets of this type measure approximately 36"x18"x78" and will hold 204 inches of filed material. This type of cabinet, with access space, requires only eight square feet of floor space. For Phase I this would require 264 square feet, for Phase II, 424 square feet, for Phase III, 616 square feet.

The table following is a summary of the preliminary estimates of space requirements for service departments. A more detailed breakdown of each category follows the summary table.

SUMMARY TABLE; PRELIMINARY ESTIMATES OF SPACE REQUIREMENTS FOR SERVICE DEPARTMENTS

	Phase I	Phase II	Phase III
	(net square feet)		
1. Admissions and Records	4,884	6,399	8,087
3. Business Office	17,497	21,859	27,961
4. Dean of Students	4,639	6,816	8,271
5. Health Service	6,119	7,682	9,602
6. Legal Counsel	652	863	1,174
7. Non-Academic Personnel	2,730	3,213	3,746
8. Publications	422	422	422
9. Public Relations	963	1,396	1,632
10. Student Counseling	6,232	8,436	10,503
11. University Administration	2,113	2,113	2,113
12. Bureau of Institutional Research	969	1,147	1,540
Inactive Record Storage	264	424	616
TOTAL	47,484	60,770	75,667

REPORT TO THE UNIVERSITY OF ILLINOIS

ADMISSIONS AND RECORDS

The following table lists the personnel as projected by the University of Illinois and the space necessary to house the personnel and equipment as recommended by S. U. A., Inc.

The area listed for the reception room should be adequate if Admissions and Records is located adjacent to a lobby which can be used for reception overflow during peak periods.

Space for a work area of sufficient size to accommodate part of the temporary clerks is provided. It does not seem financially feasible to provide a work area for each temporary clerk when the space is used for such a short period of time.

Although the requests did not indicate the need for a conference room in this area, one has been provided. Without the availability a conference room in this area, the private offices would have to be larger in order that they could be used for meetings.

ADMISSIONS AND RECORDS

Personnel	Phase I Number	Phase I Area	Phase II Number	Phase II Area	Phase III Number	Phase III Area
Assoc. Dean-P. O.	1	200	1	200	1	200
Asst. Dean-P. O.	1	150	1	150	1	150
Adm. Officer-P. O.	1	150	1	150	1	150
Recorder-P. O.	1	150	1	150	1	150
Adm. Coun. -P. O.	2	200	3	300	4	400
Asst. Recorder-M. S. O.	2	150	2	150	3	225
Secy I-P. O.	1	100	1	100	1	100
Secy II-P. O.	-	-	1	100	-	-
Secy III-P. O.	-	-	-	-	1	100
Clerk-Steno III-M. S. O.	1	60	-	-	-	-
Chief Clerk- M. S. O.	2	120	2	120	2	120
Clerk-Typ III-M. S. O.	2	100	3	150	4	200
Clerk-Typ II-M. S. O.	4	200	7	350	10	500
Typing Clerk III-M. S. O.	3	150	4	200	5	250
Typing Clerk II-M. S. O.	12	600	20	1,000	27	1,350
Mach. Op. II-M. S. O.	1	50	1	50	1	50
Strkpr-M. S. O.	1	50	1	50	1	50
TOTAL	35	2,430	49	3,220	63	3,995
Equipment						
Addressograph-Multilith #831	1	100	1	100	1	100
IBM # 826	1	100	1	100	2	200
IBM # 026	1	60	1	60	1	60
IBM Sorter	1	39	1	39	1	39
Automatic Typewriter	-	-	1	50	1	50
Postage Meter	1	50	1	50	1	50
Switchboard	1	300	1	450	1	600
Vault	1	80	1	80	1	80
Microfilm Reader-Printer	1	100	1	100	1	100
Thermofax Mach.	2	100	2	100	3	150
TOTAL	10	929	11	1,129	13	1,429
Special Areas						
Reception & Student Waiting	1	300	1	300	1	300
Receiving & Stores	1	200	1	300	1	400
Acoustically Treated IBM Areas	2	a	2	a	2	a
Ladies' Restroom, Lounge & Cloakroom	1	150	1	200	1	250
Men's Rest Room	1	b	1	b	1	b
Conference Room	1	300	1	300	1	300
TOTAL	7	950	7	1,100	7	1,250

a Space allocated under "Equipment".
b Part of building core facilities.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Files	25	275	50	550	83	913
Work Area		300		400		500

ADMISSIONS AND RECORDS: GRAND TOTAL

4,884	6,399	8,087

3. BUSINESS OFFICE

The following paragraphs present a brief synopsis of the space allocations to the various components which make up the Business Office. The table following the synopsis presents a detailed enumeration of the space allocations.

A) Administration

Private offices have been provided for the Business Manager, the Assistant Business Manager, the Purchasing Agent, the Division Chief Accountant and secretaries. Space for desk and chairs are provided for the Clerk-Stenographers in an open area. They should also be provided with files for current material, a supply cabinet and one work table. Allowing five 5-drawer files under all three Phases, the additional space necessary in the open area is 128 square feet. In addition to the above requirements, space should be provided for people who are waiting to see the executives in this section. 100 square feet will comfortably seat 4 or 5 people and this space could be located with one of the secretaries who would act as receptionist, or it could be located with the Clerk-Stenographers' work area. Including all the above-mentioned areas, the totals for Administration are 1, 222 square feet for Phase I and 1, 372 square feet for Phase II and III.

B) Accounting

Space for a private office has been shown for the Assistant Chief Accountant. The other employees have been provided space by an L-shaped desk and a chair. The L-shaped desk is recommended for these employees due to the fact that they will probably work with large ledgers and the extra work surface provided by the "L" desk will accommodate these ledgers. Also, within the pedestal of an "L" desk can be contained the equivalent space of a 2-drawer file. Sufficient space is shown for the card-punch operators so that they may be separated from the other employees by a soundproofed partition if desired. Additional area is provided for the files for the accounting section. This space occupied under Phase I, 77 square feet, under

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Phase II, 165 square feet, and under Phase III, 198 square feet. In addition to these areas, an additional work space large enough to contain storage cabinets and two 60"x30" tables has been provided for this group. Space for the above-mentioned items totals under Phase I, 617 square feet, under Phase II, 1,206 square feet, and under Phase III, 1,418 square feet.

C) Purchasing

A private office has been provided for the Assistant Purchasing Agent. Bank partitioned offices have been recommended for the Purchasing Assistants and the Chief Clerk. These bank partitions are usually constructed of metal and glass and are approximately 5'6" in height. They do not interfere with the lighting system or the air conditioning system. They do provide a certain amount of privacy and tend to reduce the overall noise factor in an office by allowing these people to work with some degree of privacy. General office space has been recommended for the remaining clerical employees. Additional space for files, work tables, supply cabinets and a reception area brings the total amount of space allotted for the Purchasing Section under Phase I to 710 square feet, under Phase II, 1,366 square feet, and Phase III, 1,779 square feet.

D) Cashier

A private office has been provided for the Head Cashier and general office space for the Clerk-Typists. Cages were requested for the cashiers--80 square feet per cage should provide adequate space for the equipment needed. An additional 80 square feet is allocated for the vault, which is to be shared with Payroll. Space has been provided for files in addition to those kept in the vault and in the cashiers' cages. Therefore, the total space requirements for the Cashier's Section are for Phase I, 655 square feet, and for Phases II and III, 727 square feet.

E) Payroll

A private office has been recommended for the Payroll Supervisor and general office

space (including space for two pay windows) has been allocated to the clerical employees. The vault space is to be shared with the Cashier. Space for files and a clerical work area brings the total area allocated to 463 square feet for Phase I, 643 square feet for Phase II, and 855 square feet for Phase III.

F) Tabulating

Private offices are recommended for the Tabulating Machine Supervisor and his assistant. The remainder of the area is made up of space for the various machines (IBM standards are used), files, work tables, and shelf units for card storage. Total areas for the three Phases: 1, 139; 1, 437; 2, 559 square feet.

G) Auditing

The space allocations show a private office for the Assistant Auditor and space for "L" desks for the accountants and clerks. Files, supply cabinets, and a work table comprise the remainder of the space. Phase I total is 258 square feet; Phase II, 503 square feet, and Phase III, 585 square feet.

H) General Stores

Due to the lack of any information pertaining to the type of material to be stored and the length of retention of the various stored items, we are accepting the requests of Mr. R. E. Porter of the Business Office in his letters of October 17th and 29th to Mr. Robert L. Zander. However, in the office area of this operation, we are recommending private offices for the receiving supervisor and storeroom supervisor and desk space for the receiving clerk and storekeepers. These areas total 8, 433 square feet for Phase I, 8, 605 square feet for Phase II and 8, 666 square feet for Phase III. In addition to this area, there is a large amount of space requested for stores operation under Physical Plant. A further check of these two requests is recommended to assure that duplication of facilities does not occur.

J) Bookstore

The space recommended for the Bookstore (both total area and selling area) is based on standards currently in use in several educational institutions. From this total area, private offices are recommended for the Manager and Assistant Manager and general office space for the clerks and accountant. Additional areas are also allocated to files and supply cabinets for the office staff. The total area recommended for Phase I is 4,000 square feet; for Phase II, 6,000 square feet; and for Phase III, 10,000 square feet.

3. BUSINESS OFFICE

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel-Admin						
Bus. Mgr. -P. O.	1	200	1	200	1	200
Asst. Bus. Mgr. - P. O.	1	150	1	150	1	150
Purch. Agt. -P. O.	1	150	1	150	1	150
Div. Chief Acct. P. O.	1	150	1	150	1	150
Secy-P. O.	2	200	4	400	4	400
Clerk-Steno III-M. S. O.	3	150	2	100	2	100
TOTAL	9	1, 000	10	1, 150	10	1, 150
Personnel-Acct.						
Asst. Chief Acct. -P. O.	-	-	1	100	1	100
Acct. III-M. S. O.	1	54	1	54	1	54
Acct. II-M. S. O.	1	54	2	108	2	108
Acct. I-M. S. O.	-	-	2	108	3	162
Chief Clerk - S. P. O.	1	80	1	80	1	80
Acct. Clerk-M. S. O.	-	-	1	54	1	54
Bkpg. Mach. Op. -M. S. O.	1	60	-	-	-	-
Clerk III-M. S. O.	2	108	2	108	2	108
Clerk II-M. S. O.	-	-	2	108	4	216
Clerk - Typ III-M. S. O.	1	50	1	50	1	50
Card Punch Op. - M. S. O.	-	-	2	120	2	120
TOTAL	7	406	15	890	18	1, 052
Personnel-Purchasing						
Asst. Purch. Agt. -P. O.	1	100	1	100	1	100
Purch. Asst. III-S. P. O.	-	-	1	80	1	80
Purch. Asst. II-S. P. O.	1	80	2	160	3	240
Purch. Asst. I -S. P. O.	-	-	1	80	1	80
Chief Clerk - S. P. O.	1	80	1	80	1	80
Clerk III-M. S. O.	-	-	-	-	2	100
Clerk II-M. S. O.	-	-	1	50	2	100
Clerk-Steno III-M. S. O.	1	50	2	100	2	100
Clerk-Steno II-M. S. O.	-	-	1	50	1	50
Clerk-Typ. III-M. S. O.	-	-	-	-	2	100
Clerk-Typ. II-M. S. O.	1	50	2	100	2	100
Inventory Supv. - M. S. O.	1	50	1	50	1	50
Stores Clerk - M. S. O.	-	-	2	100	2	100
TOTAL	6	410	15	950	21	1, 280

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel-Cashier						
Hd. Cashier-P. O.	1	150	1	150	1	150
Cashier III-Cage	1	a	2	a	2	a
Cashier II-Cage	2	a	2	a	2	a
Clerk-Typ-M. S. O.	1	50	2	100	2	100
TOTAL	5	200	7	250	7	250
Personnel-Payroll						
Payroll Supv. - P. O.	1	150	1	150	1	150
Payroll Clerk III-M. S. O.	1	54	2	108	3	162
Payroll Clerk II-M. S. O.	2	108	2	108	3	162
Payroll Clerk I -M. S. O.	-	-	1	54	1	54
Clerk - Steno II-M. S. O.	-	-	-	-	1	54
TOTAL	4	312	6	420	9	582
Personnel-Tabulating						
Tab. Mach. Supv. - P. O.	1	150	1	150	1	150
Asst. Tab. Mach. Supv. - P. O.	-	-	1	100	1	100
Tab. Mach. Op. III-S. A.	1	a	1	a	2	a
Tab. Mach. Op. II-S. A.	1	a	1	a	2	a
Tab. Mach. Op. I-S. A.	1	a	1	a	2	a
Card Punch Op III-S. A.	1	a	2	a	2	a
Card Punch Op II-S. A.	1	a	2	a	2	a
Card Punch Op I-S. A.	-	-	-	-	2	a
TOTAL	6	150	9	250	14	250
Personnel-Auditing						
Asst. Aud. -P. O.	1	100	1	100	1	100
Acct I-M. S. O.	-	-	1	54	1	54
Acct. II-M. S. O.	1	54	2	108	2	108
Acct. III-M. S. O.	-	-	1	54	2	108
Clerk-Typ-M. S. O.	1	54	-	-	-	-
Clerk-Steno-M. S. O.	-	-	1	54	1	54
TOTAL	3	208	6	370	7	424

a See Special Areas.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel-Gen. Stores						
Rec. Supv. - P.O.	-	-	1	100	1	100
Rec. Clerk-M.S.O.	1	50	1	50	1	50
Driver	-	-	2	b	2	b
Routemen	-	-	2	b	2	b
Strm. Supv. - P.O.	1	100	1	100	1	100
Strkpr.-M.S.O.	1	50	2	100	3	150
Supply Attendant	2	b	1	b	2	b
TOTAL	5	200	10	350	12	400
Personnel-Bookstore						
Bkstr. Mgr.-P.O.	1	150	1	150	1	150
Asst. Bkstr. Mgr.-P.O.	1	100	1	100	1	100
Cashier II-Cage	1	a	1	a	1	a
Cashier I-Cage	2	a	2	a	2	a
Strkpr. - M.S.O.	2	100	2	100	2	100
Bookstore Clerk	2	a	3	a	3	a
Clerk III-M.S.O.	1	50	2	100	2	100
Clerk-Steno-III-M.S.O.	1	50	1	50	1	50
Acct. II-M.S.O.	1	50	1	50	1	50
TOTAL	12	500	14	550	14	550
Special Areas						
Payroll and Cashier Paywindow	2	40	2	40	2	40
Cashier Cage	4	320	4	320	4	320
Vault (walk-in)	1	80	1	80	1	80
TOTAL	7	440	7	440	7	440
Tabulating						
407	2	170	3	255	6	510
514	2	110	2	110	4	220
077	2	96	2	96	4	192
083	2	78	2	78	4	156
604	1	100	1	100	2	200
557	1	56	1	56	2	112
024	2	120	3	180	6	360
056	2	120	2	120	4	240
TOTAL	14	850	16	995	32	1,990

a Work station in selling area.
b No work station required.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Special Areas (cont'd)						
General Stores & Rec.		8,200		8,200		8,200
TOTAL		8,200		8,200		8,200
Bookstore						
Vault (Walk-in)	1	80	1	80	1	80
Selling Area		2,000		3,000		5,000
Storage Area		1,037		1,809		3,559
Rec. & Marking Area	–	300	–	450	–	700
TOTAL	1	3,417	1	5,339	1	9,339
Reception Areas						
Administration		100		100		100
Purchasing		100		100		100
TOTAL		200		200		200
Files						
Administration	5	55	5	55	5	55
Accounting	7	77	15	165	18	198
Purchasing	6	66	15	165	21	231
Cashier	5	55	7	77	7	77
Payroll	4	44	6	66	9	99
Tabulating	6	72	9	108	14	168
Auditing	3	33	6	66	7	77
General Stores	3	33	5	55	6	66
Bookstore	6	66	7	77	7	77
TOTAL	45	501	75	834	94	1,048
Work Areas						
Administration		67		67		67
Accounting		134		151		168
Purchasing		134		151		168
Payroll		67		117		134
Tabulating		67		84		151
Auditing		17		67		84
Bookstore		17		34		34
TOTAL		503		671		806
BUSINESS OFFICE : GRAND TOTAL		17,497		21,859		27,961

4. DEAN OF STUDENTS

The following table shows the projected personnel and the type and amount of space necessary to accommodate this personnel. Lounge areas have been provided for the staff members; student lounges are shown elsewhere in this report.

Space for duplicating facilities has been shown; however, some thought should be given to the possibility of a centralized duplicating service which should, of course, save space and avoid duplication of equipment and personnel.

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4. DEAN OF STUDENTS

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Dean of Stdnts-P. O.	1	250	1	250	1	250
Dean of Men-P. O.	1	200	1	200	1	200
Dean of Women-P. O.	1	200	1	200	1	200
Dean of Foreign Stdnts. & Housing-P. O.	-	-	1	150	1	150
Assoc. Dean of Men-P. O.	1	150	1	150	1	150
Assoc. Dean of Women-P. O.	-	-	1	150	1	150
Asst. Dean of Men-P. O.	1	100	3	300	3	300
Asst. Dean of Women-P. O.	2	200	3	300	4	400
Asst. to Dean of For. Stdnts. & Housing -S. P. O.	-	-	-	-	1	100
Coordinator & Director of Placement - P. O.	-	-	-	-	1	150
Security Officer-P. O.	-	-	1	150	1	150
Asst. Sec. Off. -S. P. O.	-	-	-	-	1	100
Asst. Coordinator of Stdnt. Activities Prg. -P. O.	-	-	-	-	1	100
Secy-P. O.	3	300	3	300	4	400
Interviewer-M. S. O.	2	60	2	60	2	60
Chief Clerk-M. S. O.	1	50	1	50	1	50
Clerk-Steno III-M. S. O.	1	50	2	100	2	100
Clerk-Steno II-M. S. O.	3	150	8	400	9	450
Clerk-Typ. II-M. S. O.	-	-	1	50	3	150
Clerk-Steno III-Recept.	2	400	2	400	2	400
Clerk-Typ. II-Recept.	1	200	1	200	1	200
TOTAL	20	2, 310	33	3, 410	42	4, 210
Files	9	99	16	176	21	231
Work Areas	3	300	3	450	3	600
Special Areas						
Conference Rooms	2	600	4	1, 200	5	1, 500
Staff Lounges (Inc. Kitchenettes)	2	500	2	500	2	500
Reception Area	1	150	1	200	1	250
Storage Room	1	200	1	300	1	400
Student Activities Rm.	1	200	1	200	1	200
Vault	1	80	1	80	1	80
Duplicating Room	1	200	1	300	1	400
TOTAL	9	1, 930	11	2, 780	12	3, 330
DEAN OF STUDENTS: GRAND TOTAL		4, 639		6, 816		8, 271

5. HEALTH SERVICE

The table below shows the allocation of space by type for the Health Service.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Dir. Of. H. S. -P. O.	1	200	1	200	1	200
Phys. DY100 - P. O.	3	300	4	400	7	700
Phys. DY 50-P. O.	4	400	4	400	4	400
Instructors DY20-M. S. O.	-	-	2	100	9	450
Admin. Asst. -P. O.	1	100	1	100	1	100
Secy-P. O.	1	100	1	100	1	100
Clerk-Typ II	2	100	3	150	6	300
Receptionist	1	50	1	50	1	50
Staff Nurse - S. P. O.	4	300	5	375	6	450
Clinical Lab. Tech. S. A.	1	-	1	-	1	-
X-ray Tech. -S. A.	1	-	1	-	1	-
Roentgenologist-S. A.	1	-	1	-	1	-
Psychiatrist-S. A.	1	-	1	-	1	-
TOTAL	21	1, 550	26	1, 875	40	2, 750
Special Areas						
Wards (2 bed)	8	960	12	1, 440	15	1, 800
Conf. Room & Library	1	350	1	400	1	500
Drug Stock Rm.	1	100	1	100	1	100
General Stores	1	400	1	400	1	400
X-ray Room	1	175	1	175	1	175
Dark Room	1	60	1	60	1	60
Clinical Lab.	1	200	1	200	1	200
Files	34	374	62	682	97	1, 067
Staff Dressing Rooms	2	240	2	240	2	240
Exam. Rms.	3	300	4	400	6	600
Minor Surgery & Dressing Room	1	250	2	500	2	500
Sterilizing Room	1	60	1	60	1	60
Physical Therapy Rm.	2	400	2	400	2	400
Group Exam. Rm.	1	500	1	500	1	500
Reception Area	1	200	1	250	1	250
TOTAL	59	4, 569	93	5, 807	133	6, 852
HEALTH SERVICE: GRAND TOTAL		6, 119		7, 682		9, 602

6. LEGAL COUNSEL

The table below shows the allocation of space by type for Legal Counsel.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Legal Counsel - P.O.	1	200	1	200	1	200
Asst. to L.C.-P.O.	1	100	2	200	4	400
Secy-M.S.O.	-	-	1	50	2	100
TOTAL	2	300	4	450	7	700
Special Areas						
Reception		100		100		100
Law Library		100		150		200
Vault		80		80		80
TOTAL		280		330		380
Work Area		50		50		50
Files	2	22	3	33	4	44
LEGAL COUNSEL: GRAND TOTAL		652		863		1,174

7. NON-ACADEMIC PERSONNEL

The table below shows the allocation of space by type for Non-Academic Personnel.

Personnel	Phase I Number	Phase I Area	Phase II Number	Phase II Area	Phase III Number	Phase III Area
Adm. Officer-P.O.	1	150	1	150	1	150
Adm. Asst. -P.O.	-	-	1	100	1	100
Pers. Asst. -P.O.	1	100	1	100	1	100
Placement Officer-P.O.	1	100	1	100	2	200
Secy-S.P.O.	-	-	-	-	1	100
Typ. & Steno-M.S.O.	1	50	3	150	5	250
Visiting Nurse - S.P.O.	1	100	1	100	1	100
Steno-Ser. Supv. -P.O.	1	100	1	100	1	100
Multilith Op. -M.S.O.	1	50	2	100	2	100
Mimeo Op. - M.S.O.	2	100	2	100	3	150
Utility Duplic. Mach. Op. -M.S.O.	1	50	2	100	3	150
TOTAL	10	800	15	1,100	21	1,500
Special Equipment						
Absence Rec. File Control Desk	1	50	1	50	1	50
Offset Printing Mach.	2	100	2	100	2	100
Mimeo Machine	2	100	3	150	3	150
Ditto Machine	1	50	1	50	1	50
Photocopy Equip.	1	100	1	100	1	100
Darkroom Equip. & Facil	1	80	1	80	1	80
Negative Exposure Unit	1	60	1	60	1	60
Paper Cutter	1	35	1	35	1	35
Folding Machine	1	25	1	25	1	25
Collating Equip.	1	100	1	100	1	100
Varityper	1	50	1	50	1	50
Punch Press	1	35	1	35	1	35
Addressograph	1	60	1	60	1	60
Embossograph Mach.	2	80	2	80	2	80
TOTAL	17	925	18	975	18	975
Special Areas						
Reception Room	1	150	1	150	1	150
Testing Room	1	200	1	200	1	200
Conference Room	1	300	1	300	1	300
Steno Service Workroom	1	100	1	150	1	200
Steno Service Storage	1	100	1	150	1	200
Paper Storage	-	100	-	100	-	100
TOTAL	5	950	5	1,050	5	1,150
Files	5	55	8	88	11	121
NON-ACADEMIC PERSONNEL: GRAND TOTAL		2,730		3,213		3,746

S.U.A. incorporated

8! PUBLICATIONS

The table below shows the allocation of space by type for Publications.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Director-S. P. O.	!	150	1	150	1	150
Asst. Dir. & Secy-S. P.O.	1	50	1	50	1	50
Part-time Clerical-M. S. O.	1	50	1	50	1	50
TOTAL	3	250	3	250	3	250
Special Equipment						
Ditto or Mimeo	1	50	1	50	1	50
Work Table	2	100	2	100	2	100
TOTAL	3	150	3	150	3	150
Files	2	22	2	22	2	22
PUBLICATIONS: GRAND TOTAL	422		422		422	

S.U.a. incorporated

9. PUBLIC RELATIONS

The table below shows the space allocations by type for Public Relations.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Director-P. O.	1	200	1	200	1	200
Asst. Dir. -P. O.	1	150	1	150	1	150
Athletic Publicity Dir. -P. O.	-	-	1	150	1	150
Editorial Asst. -S. P. O.	1	75	2	150	3	225
Secy-S. P. O.	1	75	2	150	2	150
Clerk-Recept. -M. S. O.	1	50	2	100	3	150
Student Clerical Help-No Station	2	-	4	-	6	-
TOTAL	7	550	13	900	17	1,025
Special Areas						
Duplicating & Mail Room	1	200	1	250	1	300
Reception Area	1	100	1	100	1	150
Dark Room	1	80	1	80	1	80
TOTAL	3	380	3	430	3	530
Files	3	33	6	66	7	77
PUBLIC RELATIONS: GRAND TOTAL		963		1,396		1,632

S.U.A. incorporated

10. STUDENT COUNSELING

The table below shows the space allocation by type for Student Counseling.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Administrative Head- P.O.	1	200	1	200	1	200
Asst. Adm. Hd. P.O.	2	200	2	200	2	200
Counselor-P.O.	12	1,200	17	1,700	25	2,500
Psychometrist-IP.O. & M.S.O.	3	250	4	325	6	475
Receptionist	2	100	3	150	4	200
Clerical Personnel	3	200	4	250	7	450
TOTAL	23	2,150	31	2,825	45	4,125
Special Equipment						
IBM Scoring Machine	1	50	2	100	2	100
IBM Punch Machine	1	50	1	50	1	50
TOTAL	2	100	3	150	3	150
Special Areas						
Vocational Ed. Lib.	1	300	1	300	1	400
Psychological Test. Lab.	1	475	2	950	2	950
Test Workroom	1	250	1	250	1	250
Stat. & Research Lab.	1	150	1	150	1	200
Test Supplies Storage Room	1	150	1	250	1	300
Group Coun. Room	4	700	6	1,050	7	1,225
Grad. Stu. Study Rm.	-	-	-	-	1	150
Reading Skills Lab.	2	1,000	3	1,500	3	1,500
Children's Therapy Room	-	-	-	-	1	150
Storage for Reading Skills Lab.	1	150	1	150	1	150
Obser. & Test. Cubicle	2	150	2	150	2	150
Adm. Conf. Room	1	300	1	300	1	300
Reception Area	1	200	1	200	1	200
TOTAL	16	3,825	20	5,250	23	5,925
Files	12	132	16	176	23	253
Clerical Supply Area		25		35		50
STUDENT COUNSELING: GRAND TOTAL		6,232		8,436		10,503

11. UNIVERSITY ADMINISTRATION

The table below shows the space allocation by type for University Administration.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Administrative Head-P. O.	1	400	1	400	1	400
Asst. Adm. Hd. -P. O.	2	400	2	400	2	400
Secy-M. S. O.	2	150	2	150	2	150
Steno-Clerk-M. S. O.	2	120	2	120	2	120
TOTAL	7	1,070	7	1,070	7	1,070
Special Equipment						
Thermofax Dup. Machine	1	50	1	50	1	50
Ditto Machine	1	50	1	50	1	50
Vault	1	80	1	80	1	80
TOTAL	3	180	3	180	3	180
Special Areas						
Conference Room	1	575	1	575	1	575
Stock Room	1	80	1	80	1	80
Private Toilet Fac.	2	120	2	120	2	120
TOTAL	4	775	4	775	4	775
Files	8	88	8	88	8	88
UNIVERSITY ADMINISTRATION: GRAND TOTAL		2,113		2,113		2,113

S.U.A. incorporated

12. BUREAU OF INSTITUTIONAL RESEARCH

The table below shows the allocation of space by type for Bureau of Institutional Research.

	Phase I		Phase II		Phase III	
	Number	Area	Number	Area	Number	Area
Personnel						
Admin. Head P.O	1	150	1	150	1	150
Asst. Adm. Hd. P.O.	-	-	1	100	1	100
Sr. Staff Member P.O.	-	-	-	-	1	100
Non-Academic Staff S.P.O.	1	80	1	80	2	160
Non-Academic Clerical M.S.O.	2	100	3	150	5	250
Research Staff S.P.O.	-	-	-	-	1	80
TOTAL	4	330	6	480	11	840
Special Areas						
Library		250		250		250
Conference Room		300		300		300
Clerical Work Area		67		84		84
TOTAL		617		634		634
Files	2	22	3	33	6	66
BUREAU OF INSTITUTIONAL RESEARCH: GRAND TOTAL		969		1,147		1,540

S.U.A. incorporated

LIBRARY

In developing space standards we first determine the equipment and furniture the organization needs to operate at a specific level of output in an efficient and economical manner. In a University library the principal determinants of what the specific level of output will be is -- broadly speaking -- the number of students using the library and the number of books in the library's collection.

The size of any specific library area -- map rooms, microfilm reading rooms, etc. -- depend on the functions the area will be called upon to fulfill. This determines the kind and amount of equipment that will be involved, which in turn, furnishes the factual basis for a specific assigned area. A microfilm reading room will, for example, need a maximum number of units at any one time to accommodate a specified number of viewers. Each machine occupies a certain number of square feet. In addition, certain nearby files and adequate circulation space are required. In this undertaking, we lacked the information to apply this line of reasoning. Our estimates for space requirements are therefore based on our experience with the kinds of average square footage allowances usually called for by particular situations. Where -- as in the case of the audio-visual room -- the size of the allotted area depends upon the range of activities the area is expected to support we have gone along with your recommendations but with the qualifications noted below in the section on Audio-Visual Rooms. The places we indicated changes from your recommendations are in Reading Space, Student (see below) and in making allowance for maintenance, corridors, etc. In the case of the latter, our experience has been that a 30 percent allowance for this is more realistic than the 25 percent originally provided for.

Books: The standards used to assign space for the library's books are commonly accepted ones, based on averages reported by the United States Office of Education, that is, 57 books per student and one square foot for each ten books. These are conservative planning standards and accurately forecast needed space.

Reading Space, Students: We feel that the University of Illinois Standard of providing reading space for 40 percent of the student body at any one time, at the rate of 25 square feet per student, is excessive for a commuting college. Providing for 25 percent would be more than adequate, particularly since the allowance of 25 square feet per seated person allows a generous built-in safety factor for unexpectedly heavy use of library facilities by the student body.

Our recommendation for this category is 25 percent of student body, 25 square feet per student.

Colleges similar in type to that of the projected Chicago Campus in the New York Metropolitan Area, that is, schools whose students commute daily to school from home, feel, that on the basis of their own experience, a 25 percent provision would be more than ample, and actually, although detailed figures are not available, was well above their present rates of coverage. The crucial points for the libraries in the institutions surveyed came at examination time, a seasonal peak for libraries. Even then, their facilities were not inadequate. Students apparently prefer to do a good portion of their pre-examination preparations in dual-use areas; lounges, study halls, student union buildings, and cafeterias. Where these are adequate, over-crowding is non-existent. Only in New York University's Washington Square College library was there an exception to this rule. And there it was due to registration for the new term having to be held in an area usually used by the library as a supplementary reading room. Supersession of this sort would probably not be necessary in a newly-built educational plant.

Reading Space, Faculty: The University of Illinois suggested coverage of 10 percent of the total faculty is acceptable due to the alternatives available to members of the faculty -- use of their own offices for research, etc. A 50 square foot space allowance would amply accommodate a carrel-like arrangement with the necessary provisions for bookshelves, work surfaces, chairs and waste baskets.

Staff Space: In order to comment upon the adequacy of these provisions, it would be necessary to have more detailed information on:

1. the expected composition of the library force, that is, the division among personnel with fixed work stations between those requiring private working arrangements and those needing open area space, and

2. particular equipment requirements in the way of files, counter space, etc, for the non-reading space portion of the library.

Assigned work areas could conceivably range from 75 square feet for a secretary located in an open area to 200 or more square feet for the head librarian. The specific space assignment would primarily depend on the equipment called for by the individual function.

Auditorium: An auditorium of the size proposed -- 5000 square feet -- would seat an audience of approximately 500 and have sufficient area for a fully-equipped stage.

Audio-Visual: The various areas that have been proposed in the University of Illinois Standards for the audio-visual function are, by current standards, minimum ones. The required area called for by any particular audio-visual section depends on the range of assignments it undertakes and the size of the student body it serves. Generally speaking, independently run audio-visual sections occupy more space than those operated as adjuncts of libraries. That is the case usually because library-operated units operate in only a limited number of areas.

The National Education Association's Department of Audio-Visual Instruction makes the following recommendations and estimates covering the various kinds of activities and of the facilities and space that may have to be provided to accommodate them. All the figures are minimums.

1. Reception and "customer browsing" - 300 - 400 square feet
2. Previewing and auditioning - 800 - 1000 square feet
3. Processing and cataloging of new materials - 300 - 600 square feet
4. Distribution - 1900 square feet minimum, including the following areas:
   a. Booking of materials, equipment and operators - 100 - 400 square feet
   b. Storage of materials - 400 square feet minimum
   c. Storage, maintenance, and distribution of equipment - 1000 - 1200 sq. ft.
   d. Shipping and receiving area - 200 - 400 square feet
   e. Inspection and repair of used materials - 200 - 250 square feet minimum
   f. Education, training and research - 1200 - 1500 square feet

S.U.A. incorporated

5. Production
   a. Graphic arts - 800 square feet minimum
   b. Photographic - 300 square feet minimum
   c. Recording - 600 - 1000 square feet
   d. Radio - studio, 20'x20', and control room, 7'x10'
   e. Television broadcasting - Minimum to include a production studio of at least 30'x40' with a 15 foot ceiling, an adjacent prop room with a minimum size of 7'x10'.
   f. Motion picture - minimum for office and storage, 200 square feet, studio minimum 20'x30', with ceiling 10' high; editing room, 9'x12'
6. Administration - 150 -200 square feet minimum

An Audio-Visual section incorporating all of these activities would need, at a minimum, space of anywhere from 8,000 to 10,000 square feet. As an example, the Audio-Visual center of Indiana's School of Education, which is operated independently of the school's library function, contains in 25,000 square feet very nearly all of the activities listed as possibilities by the NEA. The school does not have as large a student body as is projected in Phase (4), a campus of 20,000 students.

Staff Room: We assumed that a staff room of the sizes contemplated would function primarily as a lounge. At about 25 square feet per person, a 1000 square foot staff room would accommodate 60, etc.

Map Room: The size of a facility of this kind is a function of a number of factors, the single most important being the numbers of students enrolling in heavily map-using courses such as geology and engineering. The University Heights Campus of New York University -- which is heavily oriented toward engineering students -- has a 1000 square foot map room which it finds sufficient for its purposes. But the enrollment at that NYU campus is relatively small compared to the various projected enrollments scheduled for the Illinois Chicago campus.

Documents Room: Sufficient information is not available to comment on the equipment and material that will go into this area or on the scheduled extent of its use by students and researchers.

Bookbinding and Repair: The areas scheduled to be assigned to this function would permit the University to take care of a minor amount of its overall bookbinding and book repair requirements. The major part would have to be contracted out to others. The basic equipment needed is a series of work tables with sufficient circulation space. Other necessary equipment, shearers, etc., would be mounted on the tables.

Shipping Room: Either 500 or 1000 square feet of space would be enough to house the necessary equipment for a limited-use shipping room.

Student Lounge: As in the staff room, 25 square feet per person is a desirable space allocation standard.

Rare Book Room: Space requirements depend directly on the size of the rare book collection. Since rare books require greater care than books in the library's standard collection and since they will also be in a greater variety of shapes and sizes, they will probably have to be provided with shelving at the rate of five books to the square foot instead of the ten-to-the-square-foot standard used in the general book collection.

Meeting Room: A conference room of 1000 square feet would provide sufficient seating space for approximately 50 people, allowing 20 feet per person.

Microfilm Reading Room: The size of the area set aside for this function depends on the number of machines that are considered necessary and the amount of filed microfilmed material that is considered necessary to place near the machines. A microfilm machine mounted on a table may require about 15 square feet, including the necessary circulation space.

Xerox, IBM, TV: Each of these equipment units have their own space requirements, depending on the particular unit and the number of each in use. These, in turn, depend upon the tasks for which they are used.

Seminar Room: Suggested standard to be used in assigning amount of space should be in the same as in meeting rooms -- about 20 square feet per person.

SUMMARY OF RECOMMENDED SPACE NEEDS OF LIBRARY AREAS BY ENROLLMENT

Area	Size of Enrollment 6,000	9,000	12,000	20,000
Books	34,200	51,300	68,400	114,000
Reading Space, Students	37,500	56,250	75,000	125,000
Reading Space, Faculty	2,250	3,375	4,810	7,685
Staff Space	5,000	7,500	10,000	17,500
Auditorium	5,000	5,000	5,000	5,000
Audio Visual	2,500	2,500	3,500	5,000
Staff Room	1,000	1,000	1,500	2,000
Map Room	2,000	2,000	3,000	5,000
Documents Room	3,500	3,500	5,000	7,500
Bookbinding and Repair	500	750	1,500	2,000
Shipping Room		500	500	1,000
Student Lounge	1,000	1,000	2,000	3,500
Rare Book Room	1,000	1,000	1,000	1,000
Meeting Room	500	500	500	500
Microfilm Reading Room	1,000	1,000	1,000	1,500
Xerox, IBM, and TV	500	500	1,000	1,500
Seminar Rooms			2,500	5,000
Sub Total	97,450	137,675	186,210	304,685
Plus 30% for corridors, maintenance, etc.	29,235	41,303	55,863	91,406
TOTAL	126,685	178,978	242,073	396,091

REPORT TO THE UNIVERSITY OF ILLINOIS

CHICAGO UNDERGRADUATE DIVISION

SUMMARY

PHYSICAL PLANT FACILITIES

	University of Illinois Standards			S. U. A. Standards		
	Phase I	Phase II (in sq. ft.)	Phase III	Phase I	Phase II (in sq. ft.)	Phase III
Administration Engineering	6,750	7,650	9,750	6,950	8,150	10,050
Operations	21,500	26,850	47,700	21,634	27,050	47,827
Sanitation and Safety	6,800	6,800	7,100	6,500	6,500	6,800
Utilities	1,400	1,400	2,600	1,400	1,400	2,600
Building Maintenance	23,700	24,100	35,700	18,451	18,941	29,103
Stores Operation	15,500	22,750	40,000	12,325	18,420	30,630
Outside Yard [1]	(312,800)	(347,800)	(422,800)	(314,120)	(343,120)	(390,120)
TOTALS	75,650	89,550	142,850	67,260	80,461	127,010

[1] Areas not included in totals.

S.U.A. incorporated

REPORT TO THE UNIVERSITY OF ILLINOIS

PHYSICAL PLANT DEPARTMENT

A survey of the estimated manpower for the Physical Plant Department leads us to the conclusion that the number of personnel requested is high as compared to campuses at New York University, Brooklyn College and Hofstra College, which are urban and suburban campuses in relation to a big city, and where many of their physical plant problems and procedures are similar to those that will exist at the new Chicago campus. Undoubtedly, there are considerations peculiar to the proposed campus, such as:

a) trade labor jurisdictions;

b) Civil service job classifications; and;

c) the amount of work which will be contracted to outside firms, which were inherent in the estimates.

Since the background information concerning these and other items whose impact would be reflected in any estimate of manpower requirements are beyond the scope of this report, we will accept those set forth by the Physical Plant Department and base our space allocations upon them.

Some of the listed items are essentially engineering problems which we do not feel qualified to comment on. However, where we can base our space allocation upon a comparable facility on the basis of previous studies we will qualify them to this extent.

It should be noted that there is a disparity in the student population in Phase I of this department as compared to the other departments in this study, 8,000 as compared to 6,000. We are using the 8,000 student figure in our space study for this department, as it was used as a basis for the departmental estimates. For all intents and purposes, the requirements for 8,000 will be the same as for a 6,000 student campus in Phase I.

Basic Data

We have used the basic assumptions numbered 1 to 24 in computing areas, and which we feel does not call for any comment except for Item #14 "Park-Lot Capacity" which while somewhat beyond the scope of this report, we feel should be defined if only to

subject it to further study of a specialized nature. A commuting college draws students and faculty from a wide area for a good deal of which private transportation is the most desirable means of commuting. Providing adequate parking space for colleges of this type can be complex and expensive to provide and maintain.

Assuming that the ratio of faculty members to students will be 1:6 (current ratio at the University of Illinois), the following tabulation for parking space would be:

	Phase I	Phase II	Phase III
Total faculty plus students	9,500	14,000	23,333
University of Illinois estimated parking lot capacity	2,700 cars	4,000 cars	7,000 cars
Ratio of total faculty plus students to parking space	3.5:1	3.5:1	3.3:1

This ratio is slightly higher than that of comparable institutions. However, it should be noted that the faculty to student ratio of 1:6 at the present Urbana Campus is based on a university with a graduate program. The Chicago Undergraduate campus will probably have an approximate faculty to student ratio of 1:15. Using this ratio the parking lot tabulation would be:

	Phase I	Phase II	Phase III
Total faculty plus students	8,533	12,800	21,333
University of Illinois estimated parking lot capacity	2,700 cars	4,000 cars	7,000 cars
Ratio of total faculty plus students to parking space	3.2:1	3.2:1	3.05:1

This ratio is lower than that of comparable institutions.

We recommend that a further study of this problem be made when the final site is chosen taking into account the many factors such as: faculty to student ratio; the availability of public transportation to the site; and the economic and social reasons as well as the physical which are involved in student usage of private transportation to a commuting college, all of which is beyond the scope of this report.

RECAPITULATION

Administration - Engineering

		S. U. A. Standards		
		Phase I	Phase II	Phase III
		(in square feet)		
1.	Department Head, Superintendents and Assistants	900	1, 200	1, 500
2.	Professional Engineers and Assistants	600	900	1, 200
3.	Estimating and Records	250	250	350
4.	Accounting and Files	600	800	1, 200
5.	Routing and Files	300	300	400
6.	Clerical and Files	600	700	800
7.	Telephone Switchboard and Exchange	1, 500	1, 500	1, 500
8.	Drafting and Files	600	600	600
9.	Project Engineers	300	300	400
10.	Building Inspector	100	100	200
11.	Conference and Reception	600	950	950
12.	Storage	600	600	1, 000
	TOTALS	6, 950	8, 150	10, 050

ADMINISTRATION-ENGINEERING

1. Department Head, Superintendents and Assistants

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
900	1, 200	1, 500

For all three phases, the estimate of space is adequate. The indicated space will provide private offices of 150 square feet per person and can of course be divided into several different sizes to better suit the rank of the individual to be officed.

2. Professional Engineers and Assistants

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq.ft.)		
600	900	1, 200

The space estimate for this item is figured as for item 1 above. This, too, should prove adequate.

3. Estimating and Records

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
250	250	350

Figuring a work area of approximately 100 square feet per person and a record room of 150 square feet, the estimated space for all three phases should prove adequate.

4. Accounting and Files

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
600	800	1, 200

Allowing 150 square feet for a private office for the group supervisor and a work station consisting of a desk and chair for all other employees, the estimated space required shows a remainder of 200 square feet for supplies, records and additional work area under Phase I. This area, along with the area recommended under Phase II, should prove adequate although the area recommended under Phase III will provide more flexibility of arrangement and perhaps more comfortable working conditions. Phase III standards allow space for a private office of 150 square feet for the group supervisor plus a second private office of 100 square feet for an assistant supervisor. Assuming that a clerical work station consists of a desk and chair, there still remains approximately 400 square feet to house supplies, records, and additional work area for clerical employees.

5. Routing and Files

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq.ft.)		
300	300	400

All three phases correct.

6. Clerical and Files

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
600	700	800

More detailed information is necessary regarding the type of layout desired and the amount of filed material expected to be kept in this office befo e the space allocation can be properly appraised. If, for example, under Phase III one of the seven employees is the receptionist and is given work space in the reception area and one of the remaining six employees is secretary to the Department Head and is given a private office of 100 square feet, there remains 700 square feet to accommodate five employees and the department files. A clerical work station consisting of a desk and chair for each of these five employees will require approximately 250 square feet. Adding another 100 square feet for supply cabinets and a work table which could be used by temporary or part-time employees leaves a remainder of 350 square feet for files. This area will accommodate 32 five-drawer legal file cabinets, or 160 drawers of filed material.

7. Telephone Switchboard and Exchange

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
1,500	1,500	1,500

Too much area is allocated to this service under Phases I and II but, since this is a specialized installation, adequate space should be provided for the entire operation at the outset. 1,500 square feet provides space for seven operators, two relief operators and supervisor. The seven-position switchboard will require about 400 square feet of space, the necessary telephone equipment will require another 700 square feet. The supervisor should have an office or work area of approximately 100 square feet and the additional 300 square feet could well be used as a lounge and rest room for the operators.

8. Drafting and Files

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq.ft.)		
600	600	600

A good work area for a draftsman can be set up in approximately 85 square feet. Four draftsmen at 85 square feet each equals 340 square feet which leaves 260 square feet for files and supplies.

9. Project Engineers

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
300	300	400

Standards are correct. Four private offices of 100 square feet or two two man offices of 200 square feet each should provide adequate space for the engineers.

10. Building Inspector

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
100	100	200

A two man office of 200 square feet should adequately serve this function.

11. Conference and Reception

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
400	400	400

The standards for this function are low. Since conference space and reception space are not interchangeable without furniture additions or deletions, it would seem that for the first two

phases (400 square feet) the standards indicate one conference room and one reception area, and for Phase III (600 square feet) two conference rooms and one reception area. For Phase I a conference room of 350 square feet, which will seat twelve people around a conference table, should serve the needs of the Department, and a reception area of 250 square feet will comfortably seat ten people with a receptionist and should prove adequate for the three Phases. For Phases II and III, two conference rooms of 350 square feet should provide sufficient time to schedule the necessary conferences.

12. Storage

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
600	600	1,000

A storage area of 1,000 square feet can provide approximately 1,000 linear feet of shelf space in shelving units and 500 square feet of floor space for bulk storage of incoming supplies, temporary storage of furniture and so forth. This area can of course be altered to provide more shelf space or more bulk storage space as the requirements change. Shelving units should be standardized sizes and freestanding to provide flexibility in changing from one location to another. Further discussion of storage space would necessitate more specific information regarding quantities and types of materials to be stored. A portion of this storage space might be used for inactive records storage.

REPORT TO THE UNIVERSITY OF ILLINOIS

RECAPITULATION

		S.U.A. Standards		
		Phase I	Phase II	Phase III
		(in sq. ft.)		
Operations Section:				
1.	Police and Watch	799	912	1,358
2.	Custodial	580	805	1,244
3.	Mail Service	250	300	500
4.	General University Warehouse	10,000	15,000	30,000
5.	Grounds Maintenance	2,100	2,100	3,975
6.	Transportation	5,280	5,298	7,000
7.	Car Pool Garage	2,625	2,635	3,750
	TOTALS	21,634	27,050	47,827
Sanitary and Safety Section:				
1.	Fire Protection	6,200	6,200	6,200
2.	Water Treatment and Distribution	300	300	600
3.	Pest Control	-	-	-
	TOTALS	6,500	6,500	6,800
Utilities Section:				
1.	Heating Plant	-	-	-
2.	Steam Distribution Shop	1,000	1,000	2,000
3.	Electric Distribution	400	400	600
	TOTALS	1,400	1,400	2,600
Stores Operation:		12,325	18,420	30,630

1. Police and Watch

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
900	1,000	1,400

It is assumed that the manpower estimate is for the total number of personnel, working three (3) eight (8) hour shifts within a 24 hour period. It is also assumed that one supervisor's office would be used by all three shifts with duplication of personal files, etc., for each of the three supervisors. On this basis, the following space would be adequate:

A. Supervision and M. V. O.

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
1. Supervisors Office (including private toilet)	200	200	400
2. Switchboard and Radio Room	100	100	100
3. Motor Vehicle Office (including counter space)	200	200	275
Sub-total	500	500	775

B. Officers

1. Locker Room at 7 1/2 sq. ft. per officer	113	158	263
2. Shower Room at 18 sq. ft. per shower head	36	54	70
3. Toilet and Lounge	150	200	250
Sub-total	229	412	583
TOTAL	799	912	1,358

2. Custodial

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq.ft.)		
550	750	1,100

It is assumed that this manpower will be spread over a 24 hour period in shifts in order not to conflict with class schedules, etc.

Based on the University of Illinois manpower estimates, the space assignment should be:

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
A. Supervision-assuming multi-station offices	200	280	355

2. Custodial (cont'd)

A. Janitors:

		S. U. A. Standards (in sq. ft.)		
		Phase I	Phase II	Phase III
B.	Janitor and Headquarters			
1.	Locker Room, assuming that multi-tiered lockers are used at 3 3/4 sq. ft. per janitor	250	360	612
2.	Toilet and Wash Room (assuming this is assigned space)	130	165	275
	Total	580	805	1,244

It should be noted that the assigned building area per janitor is 20,000 square feet; this is extremely high as the recommended average is 8,000 square feet per janitor.

3. Mail Service

	University of Illinois Standards (in sq. ft.)		
	Phase I	Phase II	Phase III
	250	300	500

This area assigned in the University of Illinois estimate is reasonable.

		S. U. A. Standards (in sq. ft.)		
		Phase I	Phase II	Phase III
A.	Supervision	100	100	100
B.	Mail Messengers	150	200	400
	Total	250	300	500

C. General University Warehouse

	University of Illinois Standards (in sq. ft.)		
	Phase I	Phase II	Phase III
	10,000	15,000	30,000

It is impossible for us to determine the warehouse space required without having more information as to just what is to be stored, its length of retention, etc. However, as compared to the warehouse space at New York University, Hofstra College and Brooklyn College, the amount of space estimated does not seem unreasonable, and in lieu of any further information we will accept the University of Illinois figures.

	University of Illinois Standards (in sq. ft.)		
	Phase I	Phase II	Phase III
Total	10,000	15,000	30,000

D. Grounds Maintenance

	University of Illinois Standards (in sq. ft.)		
	Phase I	Phase II	Phase III
	2,100	2,100	3,800

The assigned area for personnel and equipment necessary for year-round maintenance is:

		S. U. A. Standards (in sq. ft.)		
		Phase I	Phase II	Phase III
	Shop and Headquarters			
1.	Headquarters	200	200	285
2.	Shop Supplies	50	50	150
	Small equip. repair (mower, etc.)	150	150	200
	Heavy equip. repair	200	200	350

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
A. Shop and Headquarters (cont'd)			
Sub-total	600	600	975
B. Material and Equipment Storage			
Space for storage of:			
2 small trucks (1 1/2 ton)	500	500	
2 small tractors	500	500	
1 fork lift	125	125	
Mowing attachments, etc. and hand mowers	150	150	
Snow plow attachments	200	200	
Hand tools	25	25	
Sub-total	1,500	1,500	
Assuming that equipment for Phase III will be double that of Phases I and II			3,000
TOTAL	2,100	2,100	3,975

6. Transportation

	University of Illinois Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
	4,400	4,400	6,600

It is assumed that the vehicles listed under "Car-Pool - General University" would be garaged in "Equipment Storage" in this section. In addition to these vehicles, space should also be made available for a trash removal truck. Space requirements based on this assumption are:

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
A. Equipment Storage			
10 passenger cars and wagons at 170 sq. ft. per vehicle	1,700	1,700	
4 trucks (up to 1 1/2 ton) at 250 sq. ft. per truck	1,000	1,000	
1 trash removal truck at 300 sq.ft.	300	300	
4 buses at 480 sq. ft. per bus	1,920	1,920	
Sub-total	4,920	4,920	
Assuming that this fleet will be increased by approximately 1/3 in Phase III, the space required will be:			6,500
B. Drivers, Operators, etc.			
Locker space at 7 1/2 sq. ft. per driver	60	68	90
Washroom	50	60	60
Lounge and Dispatch Office	250	250	350
Sub-total	360	378	500
Total	5,280	6,298	7,000

S.U.A. Incorporated

7. Car Pool Garage

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
3,300	3,300	4,300

Assuming that the car pool will consist of the same vehicles listed in item # 6, the space requirements are:

A. Office and Parts

		S. U. A. Standards		
		Phase I	Phase II	Phase III
		(in sq. ft.)		
1.	Office	150	150	150
2.	Parts - day to day inventory only (availability of supply in Chicago makes larger stock of parts unnecessary)	100	100	100
	Sub-total	250	250	250

B. Repair and Service

1.	Area with hydraulic lifts or pits (capable of handling buses) at 500 sq. ft. per unit	1,000	1,000	1,500
2.	General repair area at 500 sq. ft. per unit	1,000	1,000	1,500
3.	Work bench area at 100 sq. ft. per bench	300	300	400
4.	Locker room, shower and wash room facilities	75	85	100
	Sub-total	2,375	2,385	3,500

Phase III assumes that the fleet will increase by 1/3. This repair and service area is large enough to handle the routine repairs and maintenance for all the University's cars and service vehicles.

Total	2,625	2,635	3,750

SANITATION AND SAFETY SECTION

1. Fire Protection

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
6,500	6,500	6,500

It is assumed that the firehouse will be built in Phase I for the ultimate size of the campus. It is also assumed that the manpower estimates are for the total number of personnel in 3 eight hour shifts. The space necessary for housing the University's own fire protection equipment and personnel is:

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
Equipment: 1 pumper, 1 chemical truck (to be acquired after Phase I), 1 hook and ladder truck, 1 chief's emergency wagon	3,000		3,000
Office	150		150
Locker Room 36 at 7 1/2 sq. ft. per person	270		270
Shower Room with 4 heads	70		70
Sleeping Room 12 at 60 sq. ft. per person	720		720
Recreation Room and Kitchen	400		400
Storage	150		150
Repair Shop	250		250
Hose drying tower	60		60
Oil and grease storage	50		50
Tool storage	100		100
Clothes drying	100		100
Circulation area - including fire poles and stairs	400		400
Raised desk area and alarm board	75		75
Toilets	120		120
Second floor hall	185		185
Heater and utilities room	150		150
TOTAL	6,200		6,200

2. Water Treatment and Distribution

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
300	300	600

It is assumed that this will include water softening, demineralization and boiler-feed water treatment. The area assigned by the University of Illinois is adequate for this purpose, assuming also that the requirement will be doubled in Phase III (from University of Illinois basic requirements) Space Required:

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
TOTAL	300	300	600

		University of Illinois Standards (in sq. ft.)		
		Phase I	Phase II	Phase III
1.	Heating Plant - this is an engineering problem	-	-	-
2.	Steam Distribution Shop - this is an engineering problem and an area we do not feel qualified to comment on, and we will accept the University of Illinois estimate	1,000	1,000	2,000
3.	Electric Distribution - while this is essentially an engineering problem as to the electrical distribution based on past experience the areas are reasonable, assuming that an average distribution vault will measure 100 square feet, and the size of the campus and the number of buildings is as assumed.	400	400	400
Stores Operation				
1.	Office, files and records	500	750	1,000
2.	Receiving, shipping and storage	15,000	22,000	39,000
	TOTAL	15,500	22,750	40,000

		S. U. A. Standards (in sq. ft.)		
		Phase I	Phase II	Phase III
1.	Office: estimating 75 sq. ft. per person plus one 5-drawer file per person and counter and waiting space	325	420	630
2.	Receiving, shipping and storage; for the purpose of a preliminary estimate approximately 1 1/2 square feet of area per student for this purpose should be adequate.	12,000	18,000	30,000
	TOTAL	12,325	18,420	30,630

REPORT TO THE UNIVERSITY OF ILLINOIS

RECAPITULATION

Building Maintenance Section: Facilities

		S. U. A. Standards (in sq. ft.)		
		Phase I	Phase II	Phase III
1.	Carpenter Shop	675	675	1,350
2.	Mill	1,920	1,920	3,840
3.	Furniture Shop	1,000	1,000	2,000
4.	Electrician, Sound Tech., Fixture Wash and Elevator Mechanics	2,192	2,192	4,384
5.	Plumbers and Steamfitters	1,300	1,300	2,600
6.	Paint and Glass Shop	1,824	1,824	1,824
7.	Sheet Metal and Roofers	1,665	1,665	1,665
8.	Masons and Construction Labor	875	875	875
9.	Machine Shop	1,970	1,970	2,630
10.	Locksmith and Keys	500	500	500
11.	Tool Crib	300	300	500
12.	Meeting Room	500	500	500
13.	Locker & Wash Room	1,730	2,220	3,835
14.	Equipment Storage	2,000	2,000	2,600
	TOTAL	18,451	18,941	29,103

BUILDING MAINTENANCE SECTION

1. Carpenter Shop

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
600	600	1,200

A carpenter shop which would include the following equipment with sufficient space to work on 4x8' panels and 16' lengths of lumber:

1. 4- 2'-6"x7' -0" benches;
2. 1- bench equipped with grinder and metal vise
3. 1 - 10" tilting arbor circular saw
4. 1 - band saw (18" throat)
5. 1 - drill press

would occupy:

S. U. A. Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
675	675	1,350

2. Mill

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
2,000	2,000	4,000

A mill (which should be an extention of the Carpenter Shop) including the following equipment:

1. 12" radial saw
2. shaper
3. 12" heavy duty circular saw
4. 12" joiner
5. storage rack for 4'x8' panels
6. storage rackfor 16' lumber
7. 3'x7' work bench

would occupy:

S. U. A. Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
1,920	1,920	3,840

Assuming in Phase III that the personnel and therefore the shop area for both the Carpenter Shop and the Mill will double.

3. Furniture Shop

S. U. A. Standards and University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
1,000	1,000	2,000

The University of Illinois estimate of required space is reasonable for the repair and maintenance of furniture.

4. Electric & Sound Technician; Fixture Wash & Light Bulb Replacement & Elevator Mechanics	University of Illinois Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
	3,000	3,000	6,000

It is assumed that the Sound Technical Service will operate and maintain projection and sound systems for regularly scheduled classroom work and theatre equipment. This is essentially a function of the Audio-Visual Service and we question whether this would not be handled more efficiently under their direct control.

The allocation of space would be:

		S. U. A. Standards	
		Phase I	Phase II	Phase III
		(in sq. ft.)		
1.	Electricians			
a)	4 - benches 2' 6" x 6' - 0" with 4'- 0" aisle space	156	156	
b)	General work area for motor repair, etc. & circulation space	400	400	
c)	Parts storage	150	150	
d)	Area for central control of clock, intercom and exit light systems	150	150	
2.	Fixture Wash and Bulb Replacement			
a)	bulb, fluorescent tube storage and supplies	100	100	
b)	bench and work area	100	100	
3.	Elevator Mechanics			
a)	2 - 3' x 8' benches w/4' - 0" aisle space	112	112	
b)	general work area and circulation space	200	200	
c)	parts storage	50	50	
4.	Sound Technicians			
a)	4 - 3' x 8' benches w/4' - 0" aisle space	224	224	
b)	general work area and circulation space	400	400	
c)	parts & equipment storage	150	150	
	TOTAL	2,192	2,192	

Using the University of Illinois assumed manpower for Phase III, and also assuming that the work load and necessary equipment will increase at the same rate, the space allocated for Phase III would be: 4,384

5. Plumbers and Steamfitters

		University of Illinois Standards		
		Phase I	Phase II	Phase III
		(in sq.ft.)		
		2,000	2,000	4,000

		S. U. A. Standards		
		Phase I	Phase II	Phase III
		(in sq. ft.)		
a)	A shop containing facilities for pipe threading up to 6", cutting and welding and with 5 - 3' x 8' benches;	1,000	1,000	
b)	Storage of pipe, fixtures, trim, etc.	300	300	
	TOTAL	1,300	1,300	

Assuming the work load is doubled in Phase III, the allocated space would be: 2,600

It should be noted that the University of Illinois' space estimate is higher than the plumbing maintenance shops at suburban and urban campuses we have studied at Hofstra College, Brooklyn College and New York University and the space we have allocated is more generous than they are currently using.

6. Paint and Glass Shop

		University of Illinois Standards		
		Phase I	Phase II	Phase III
		(in sq. ft.)		
		2,000	2,000	2,000

A shop containing the following facilities would be adequate:

		S. U. A. Standards		
		Phase I	Phase II	Phase III
		(in sq. ft.)		
a)	4 - 3' x 8' benches w/ 4' - 0" aisle space	224	224	
b)	General work and circulation area	600	600	
c)	2 spray booths at 75 sq. ft.	150	150	
d)	Finishing Room	200	200	
e)	Paint storage	150	150	
f)	Ladder and Scaffolding storage	200	200	
g)	Glazier's work space w/glass storage	250	250	
h)	Storage space for spray equipment, brushes, etc.	50	50	
	TOTAL	1,824	1,824	

It is assumed that none of the painting on-campus will be done on a contract basis and that the personnel listed will do all the required painting. On this basis, it is conceivable that the only space which would increase would be the ladder and scaffolding area which we estimate would be doubled in Phase III. Therefore, the allocated space for Phase III is 2,024

7. Sheet Metal & Roofers

	University of Illinois Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
	2,000	2,000	2,000

A shop containing the following equipment and material storage would be adequate:

		S. U. A. Standards		
		Phase I	Phase II	Phase III
		(in sq. ft.)		
a)	1 - 4' break	250	250	250
	1 - 4' shear	250	250	250
	1 - Pittsburgh machine (crimper)	125	125	125
	4 - 4'x8' sheet metal benches w/4' - 0" aisle	400	400	400
	2 - 3'x8' roofers benches	112	112	112
	1 - Spot welder	50	50	50
	15% circulation factor	178	178	178
b)	Storage - sheet metal & supplies	150	150	150
c)	Storage - roofing material & supplies	150	150	150
	TOTAL	1,665	1,665	1,665

8. Masons and Construction Labor

	University of Illinois Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
	1,500	1,500	1,500

The space the University of Illinois has allocated for this item seems large as the storage space required for tools, materials, equipment, and supplies would be:

		S. U. A. Standards		
		Phase I	Phase II	Phase III
		(in sq. ft.)		
1.	Tools	75	75	75
2.	Equipment:			
a)	compressor	150	150	150
b)	cement mixer	150	150	150
c)	wheel barrows, etc.	100	100	100
3.	Masons supplies and materials	200	200	200
4.	General storage - Tarpaulins, horses, barriers, etc.	200	200	200
	TOTAL	875	875	875

9. Machine Shop

	University of Illinois Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
	2,000	2,000	2,500

(Machine Shop continued on next page)

9. Machine Shop (continued)

Assuming that the following would be the required equipment, the space allocation would be:

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
6 - 3' 4 5' benches w/4' - 0" aisle space circulation area at ends	336	336	
1 - Bench lathe 60" bed	100	100	
1 - 15" lathe	165	165	
1 - 12 1/2 lathe	165	165	
1 - Milling Machine	100	100	
2 - Drill Presses	100	100	
1 - Power hack saw	50	50	
1 - Surface grinder	180	180	
1 - Tapping & threading machine	50	50	
1 - Grinder	50	50	
1 - Welding area, including bench, degreaser cabinet, & welder	192	192	
1 - Tool rack	75	75	
1 - Stock rack	25	25	
1 - Tool room and general storage	150	150	
Circulation area (approximately 15%)	232	232	
TOTAL	1,970	1,970	

The allocation for Phase III assumes that 1/3 more personnel would require an equal increase in equipment and area. The area for Phase III would be: 2,630

10. Locksmith and Key Shop

S. U. A. Standards & University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq.ft.)		
500	500	500

The space allocated by the University of Illinois is adequate for 2 benches with key machines, work space, and necessary storage space for parts and supplies.

11. Tool Crib

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
3,000	3,000	4,000

Assuming that the tool crib will be used as a central repository for hand tools for all the divisions of the Building Maintenance Section, we feel that additional tool crib space, in effect, is maintained by each of the trades at their working stations and in the specialty shops. On the basis of this assumption, we feel that the following allocation of space would be adequate.

S. U. A. Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
300	300	500

12. Meeting Room

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq.ft.)		
500	500	500

Assuming there is a need for a room with the size estimated by the University of Illinois, it would be ample for meetings of 35 people.

13. Locker and Wash Room

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
1, 600	2, 000	3, 500

The following space would be allocated:

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
1. Wash room (including toilet facilities)	175	210	280
2. Locker room at 3.75 sq. ft. /person (Multi-tiered)	290	375	675
3. Shower room at 18.sq.ft. /shower head	110	145	180
4. Employee's room at 15 sq. ft. /person	1, 155	1, 500	2, 700
TOTAL	1, 730	2, 220	3, 835

14. Equipment Storage

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
2, 000	2, 000	2, 000

The space allocated by the University of Illinois would provide 10 units at 200 sq. ft. which would house the trucks, trailers, and generators required by this section. This allocation of space, it is reasonable to assume, would increase by approximately 1/3 to meet the increased needs in Phase III.

S. U. A. Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
2, 000	2, 000	2, 600

REPORT TO THE UNIVERSITY OF ILLINOIS

RECAPTITULATION

Outside Yard Area:	S. U. A. Standards (in sq. ft.) Phase I	Phase II	Phase III
1. Trash Collection Depot	72,000	72,000	72,000
2. Employee Parking	66,000	95,000	134,000
3. Car Pool Storage	7,000	7,000	10,000
4. Stores	10,000	10,000	15,000
5. Service Yard	72,000	72,000	72,000
6. Heating Plant	87,120	87,120	87,120
TOTALS	314,120	343,120	390,120

REPORT TO THE UNIVERSITY OF ILLINOIS

OUTSIDE YARD AREA

1. Trash Collection

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
87,120	87,120	87,120

Providing a pick-up and turn-around area for trash removal truck would require 1,500 square feet at each collection depot. Assuming that each of the ultimate number of 48 buildings (in Phase III) will have a trash pick-up depot then total outside area for this purpose will be:

S. U. A. Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
72,000	72,000	72,000

2. Employee Parking

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
75,000	105,000	170,000

Based on the assumed number of personnel as follows:

1)	Physical Plant	270	369	610
2)	Administration (Service Depts.)	191	279	363
3)	Cafeteria	60	100	120
4)	Student Union (exclusive of Bookstore & Cafeteria)	10	10	10
5)	Academic Depts. - non academic personnel	35	50	65
	Total Personnel	566	808	1,168

		S. U. A. Standards		
		Phase I	Phase II	Phase III
1)	Assuming ratio of parking space to employees to be 2.5:1	227 cars	323 cars	468 cars
2)	AREA at 150 cars per acre	66,000 sq. ft.	95,000 sq. ft.	134,000 sq. ft.

3. Car Pool Storage

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
10,000	15,000	20,000

Assuming that outside storage space will have to be provided for:

10 passenger cars
4 trucks
4 buses

- the following area (including driveways) would be adequate:

	S. U. A. Standards		
	Phase I	Phase II	Phase III
	(in sq. ft.)		
Assuming approximately 1/3 increase in Phase III	7,000	7,000	10,000

These areas are assumed to be in one central location. Diversification would increase these total areas.

4. Stores

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
10,000	10,000	15,000

To establish the space requirement for this operation it will be necessary to provide us with more information as to the inventory, retention, etc. of the stores. In the absence of this information we will accept the University of Illinois estimates.

5. Service Yard

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
43, 560	43, 560	43, 560

Assuming that the space requirements for this item will be similar to item # 1 the area to be set aside for this purpose is:

S. U. A. Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
72, 000	72, 000	72, 000

6. Heating Plant

University of Illinois Standards		
Phase I	Phase II	Phase III
(in sq. ft.)		
87, 120	87, 120	87, 120

This is an essentially engineering problem which we do not feel we are qualified to comment on. We will therefore accept the University of Illinois Standards for this area.

REPORT TO THE UNIVERSITY OF ILLINOIS

STUDENT UNION

The space requirements for the Student Union are projected for the 20,000 student campus. Further information from the University Administration would have made possible a space program tailored more closely to the specific aims of the University. In the absence of such information, we have made certain assumptions, and worked out a scheme accordingly. The assumptions are clarified, where necessary.

1. Administrative	Area (in sq. ft.)
Director's Office	200
Assistant Director's Office	125
Social Director's Office	150
Assistant Social Director's Office	125
General Office	1,000
Reception Area	500
Reception Area (Social Director)	150
Conference Room	300
Mimeograph Room	200
Telephone and Control Area	200
Alumni Offices	2,000
Student Activities	5,000
General Storage	500
Total Administrative	10,450

It should be noted that the figures listed for alumni offices and student activities represent over-all estimates, since it was not possible to make a detailed breakdown. However, the areas should be adequate for any combination of functions for which offices or other areas will be required. If desired, these areas can be included under University Administration. They are listed here because of their functional relationship.

2. Social and Cultural	Area (in sq. ft.)
General Lounge (seating for 100)	3,000
Music Lounge (seating for 50)	1,600
Art Display Room	1,000
Browsing Room	1,000
Television Rooms (3 at 500 sq. ft.)	1,500
Total Social and Cultural	8,100

3. Games and Crafts	Area (in sq. ft.)
Bowling Alley (12 alleys)	10,000
Billiard Room (9 tables)	1,900
Table Tennis Room (9 tables)	2,400
Card Rooms (4 at 440 sq. ft.)	1,760
Arts and Crafts Shops (including print shop)	2,000
Total Games and Crafts	18,060

The area provided for a bowling alley includes sufficient space for all auxiliary requirements, such as pin shop, storage, equipment room, passageways, spectator seating, concourse, locker rooms and control area.

4. Bookstore

This service area has already been provided for under the Business Office. It is conceivable that the bookstore could be included with the Student Union, but to avoid duplication, we are not listing the requirement here.

5. Auditorium	Area (in sq. ft.)
Auditorium (capacity 750)	7,500
Dressing Rooms (1 men, 1 women at 350 sq. ft.)	700
Set storage	2,000
Green Room	350
Check Room	735
Office	150
Lobby	1,200
Spotlight and projection booths	400
Total Auditorium	13,035

The space allocated for the auditorium provides for seating of 750 people on one floor, in seats 22" wide and 32" back to back, and includes sufficient space for a stage 25 feet deep. If an auditorium of this type, designed for stage productions, is to be provided elsewhere on the campus, and the only requirement here is for an assembly room, the space should be reduced accordingly.

6. Ballrooms and Meeting Rooms	Area (in sq. ft.)
A. Ballroom (seating 420 at 17 sq. ft.)	7,200
Serving Kitchen	1,500
Soiled dish room	450
Lounge	4,000
Chair and Table Storage	625
Checkroom	550
B. Meeting Rooms (3 at 1,200 sq. ft.)	3,600
Total Ballrooms and Meeting Rooms	17,925

If desired, the ballroom can be subdivided into three areas. Chair and table storage was calculated as follows:

a) Chairs: 420 chairs stacked 15 high on dollies 25" x 25" would require 30 stacks at about 4 square feet per table, or 420 square feet. Fifteen percent was added to the total for circulation.

The ballroom lounge could be planned in such a way that it could also serve as an additional general lounge.

7. Food, Dining, and Related Areas	Area (in sq. ft.)
Cafeteria (1,445 seats at 15 sq. ft.)	21,675
Cafeteria Serving Area (20 % of seating area)	5,000
Snack Bar (225 seats at 13 sq. ft.)	2,925
Private Faculty Dining Rooms (335 seats at 25 sq. ft.)	8,375
"Commuters" Lunch Room (665 seats at 15 sq. ft.)	9,975
Vending Machine Room (12 machines at 48 sq. ft.)	575
Kitchen (including lounge, lunch, and locker areas for staff)	21,000
Storage and preparation area	2,500
Dishwashing	3,000
Dietician's Office	200
Total Food, Dining, and Related Areas	75,225

In calculating the dining areas, it is assumed that about 25% of the students will eat in the cafeteria during peak periods, and that a turnover of three will be maintained. An additional 10% of the students will bring their own lunch. These ratios are based on prevailing facilities in similar "commuting" colleges in New York, including City College, Brooklyn College, New York University, and Hofstra College.

Assuming a six to one student faculty ratio, and providing for about 30% of the faculty, with a turnover of three, 335 seats should be provided in waitress served private dining rooms.

The ratio of dining area to kitchen and service area has been established at 1.33 to 1. This figure is a national average of many similar operations in other colleges.

8. Miscellaneous	Area (in sq. ft.)
Information, ticket selling, reception	1,000
Post Office	1,000
General Storage	1,000
Total Miscellaneous Areas	3,000
Net Grand Total Student Union	145,795